W E E K L Y R E P O R T S
Of The Office Of
WESTERN IRRIGATION AGRICULTURE

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San Antonio

The first 22 days of 1927 have been rather uniformly cool, though no extremely low temperatures have been recorded. The "growing weather" which so often occurs during the winter has been decidedly lacking to date. This condition has been favorable to fruit trees and semi-hardy ornamentals in that they have remained dormant. Precipitation has been light, the total being only .27 inch, recorded on five different dates. Following is a summary of climatological data recorded during the period:

Period	Temperature				Precipitation	Sky		
	Max.	Min.	Mean	G.D.R.		Clear	P.Cloudy	Cloudy
Jan. 1 to 8	83	34	57.9	46	.01	7	0	1
" 9 to 15	69	24	44.2	33	.06	6	0	1
" 16 to 22	81	38	61.8	33	.20	0	2	5

Early seeded small grains and flax have made satisfactory growth, but the late seeded fields are needing moisture in the first few inches of soil.

Plowing of the following fields was completed during the period: AB-8, B-4, F-3, and the Herbst plat.

Fourteen rotation plats and all of fields C-3 and D-3 were cultivated by double disking to discourage winter weeds and volunteer oats.

Dirt was moved from the waste area between fields E-3 and C-4 to the south side of the date orchard on E-3, where some of the roots had been exposed by erosion to a depth of from 12 to 16 inches.

The following pistache trees were moved from nursery A-1 to orchard positions in Field D-4: 1 pistacia vera (var. Bronte) on P. chinensis; 1 P. vera (var. Bronte) on P. mutica; 10 seedlings of P. mutica; 3 seedlings of P. chinensis; and 20 seedlings and cuttings of P. texana.

Five additional subterranean concrete monuments were set in the rotation roadways to mark permanently the field corners and to facilitate the periodic measurement of plat borders for planting.

Geo. T. Ratliffe.

Yuma

The maximum temperature for the month of January was 80, mean maximum 70.9; minimum 31, mean minimum 39.5. The mean temperature for the entire month was 55.25, greatest daily range 43, and precipitation .48 inch. Killing frosts were recorded on only three days.

A summary of the climatological data recorded for the year 1926 shows that the absolute maximum temperature was 113, the absolute minimum 22; and the total precipitation was 8.69 inches compared with .85 inch in 1924, 4.28 inches in 1925, and a 17-year average of 4.24 inches. The frost-free period in 1926 was 319 days, the average for the last 17

Yuma (continued)

years being 258 days. In total precipitation and the length of the frost-free period all previous records for the 17-year period were exceeded in 1926.

The heavy rains of last August and September and of January this year did considerable damage to alfalfa hay on the Project. Many stacks spoiled, and some crops were damaged during the time of cutting The present price of alfalfa hay, baled and on board cars at Yuma, is about $18 per ton.

Cotton picking and ginning continues rather slowly, with a total of 28,000 bales ginned up to January 29. All 13 gins on the Project are still in operation, but many of these will close down in about two weeks. It is estimated that the total production will exceed 30,000 bales, making an average of about a bale to the acre. Picking prices remain at $1.25 per 100 pounds; and local buyers are paying about 11 cents for the lint. Seed at the gin is bringing $18 per ton on the Arizona side and $20 per ton in California.

The acreage planted to lettuce last fall has come through the winter in excellent shape except for some losses due to grasshopper injury and unusually warm weather early in December. The crop is now being picked at the rate of several carloads per day. Many unit holders are getting lands planted to alfalfa with the idea of renting for cash to lettuce growers this coming fall.

Several fields of cantaloupes have already been planted, and it is estimated that several hundred more acres will be seeded before the first of March. The low prices that the growers have received for cotton and alfalfa seed during the last season has stimulated the planting of truck crops.

The local poultry, dairy, and hog industries have also increased during the last four months.

Station work performed during the last month has included the final picking of cotton on the plats in the irrigated rotations; the preparation of the land and the seeding of alfalfa on plats A-1 to 6 and D-30 to 37; the seeding of sweet clover on plats D 18-26; plowing cotton, corn, and grain sorghum stubble plats on the rotations; pruning date palms; and constructing a hay and stock shed.

The yields of Pima cotton in the rotations for the year 1926 are given in the following table.

Yuma (continued)

Yields of Seed Cotton in the Irrigated Rotations at the U. S. Yuma Field Station for the Year 1926

Rotation Number	Plat Number	Stand per Acre	Yields per Plat: First picking	Yields per Plat: Second picking	Yields per Plat: Total	Yield per Acre
			pounds	pounds	pounds	pounds
4	D-II- 8	12,320	317	106	423	1,692
5	- 9	12,336	487	117	604	2,416
6	-10	12,664	278	89	367	1,468
7	-11	11,352	308	55	363	1,452
20	C-I- 9	9,260	283	40	323	1,292
22	- 7	11,052	184	86	270	1,080
23	-II- 7	10,884	350	130	480	1,920
30	- 5	10,460	146	116	262	1,048
40	- I-12	11,508	575	118	693	2,772
40	-13	11,464	501	91	592	2,368
44	-II-12	10,864	373	115	488	1,952
44	-13	11,468	323	87	410	1,640
46	-17	11,984	387	114	501	2,004
50	D-II- 1	11,336	292	77	369	1,476
52	- I- 1	12,052	404	48	452	1,828
60	-II-12	11,796	327	105	432	1,728
60	-13	11,756	281	109	390	1,560
61	- I-11	9,788	417	98	515	2.060
61	- 6	12,140	249	120	369	1,476
63	-12	11,812	519	106	625	2,500
63	-13	11,712	378	74	452	1,808
Maximum	-------	12,664	575	130	693	2,772
Minimum	-------	9,260	146	40	262	1,048
Average	-------	11,334	351	95	447	1,788

Edward G. Noble

W E E K L Y R E P O R T S
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Newlands

The following meteorological data were recorded at this station during the four-week period ending February 12: Mean maximum 45.6, maximum 55 on January 31 and February 1; mean minimum 19.1, minimum 6 on January 22 and 23; .56 inch of rain fell during the period.

The farm work at the station has been principally of a general nature. The orchard has been pruned, ditches cleaned, irrigation boxes repaired, brush burned, and the fall-plowed plats have been harrowed.

The teamster has been hauling dirt to raise the checks B-2, 3, and 4. As soon as this work is completed, these plats will be seeded to sweet clover. It is hoped that the application of this good dirt will make it possible to get a stand of clover on these plats and that by plowing under one or more crops of clover this piece can eventually be reclaimed. If such a program is possible, this area will finally be put into grass pasture.

The cooperative experiment being conducted by this station and the State station is showing a number of rather interesting results, one of which is that veal can be profitably fed on a ration of whole and skim-milk. It has also been shown that there are various ways of feeding hogs at a profit under local conditions.

The dairy-feeding experiment has not progressed far enough to draw definite conclusions as to the feeding of grain under the conditions that exist here. However, the results so far indicate that the grain-fed groups are at least paying for the feed.

Last week an economic conference was held by the Extension people, and the problems relating to the agriculture of the State were studied. Special attention was given to the agriculture of this project. Those in attendance were the State officers of the Extension office, Mr. Merritt of Washington, Mr. Cline of the local Extension office, and a representative from this station. The large attendance of the project farmers at this meeting indicated that they were greatly interested.

Comparative Weather Report for the Month of February, 1927

	1927	Avg. for 21 yrs.
Temperature, mean maximum	50.8	50.2
" , " minimum	27.4	23.0
" , mean	39.1	36.5
" , highest	62.0	64.4
" , lowest	11.0	8.0
Precipitation, inches	1.02	.49
Wind, miles per hour	3.03	3.29
Evaporation, inches	1.49	1.54
Days, clear	7	14.1
" , partly cloudy	8	6.6
" , cloudy	13	7.6

E. W. Knight.

San Antonio

Continuously rainy weather prevailed throughout the three weeks ending February 12. Twelve days were totally cloudy, 8 were partly cloudy, and only one day was clear. A measurable quantity of precipitation was recorded for ten different days, with a total of 2.11 inches for the period. Only a very limited amount of field work was possible. Temperatures ranged slightly above normal, with a maximum of 79 recorded for February 4 and a minimum of 38 for February 9 and 10.

Farm labor has been utilized for such rainy weather jobs as hauling gravel to repair farmstead drives, shelling corn, whitewashing the greenhouse, and miscellaneous repair work. A "Time of Planting" flax plat was seeded January 29, and a small amount of spraying was done between showers.

All winter crops throughout the region are looking exceptionally well at this time.

Geo. T. Ratliffe.

Yuma

During the month of February the maximum temperature was 88; the mean maximum was 75.8; minimum, 34; mean minimum, 44.4. For the entire month the mean temperature was 60.1; greatest daily range, 42; precipitation, .25; 9 days were reported to be clear, 11 partly cloudy, and 8 cloudy.

Although general storms were reported throughout the Southwest, only four light showers occurred in this region. On the coast five or six inches of rainfall was recorded, and in the central and northern parts of Arizona there were heavy storms.

A flash flood occurred on the Colorado River with about 50,000 second-feet coming from the upper waters and about the same amount coming down the Gila River from eastern Arizona. No damage was reported to the levee system on the project.

The temperatures for the month were above normal; and, with the absence of wind, most of the field crops are making an early growth. Unless the weather turns cooler immediately cotton planting will begin next week.

Cotton ginning still continues on the project; approximately 30,500 bales have been ginned to date. Some of the gins, however, have closed and others are operating on a part-time schedule. Very good yields of lettuce have been reported from the fields on the project, but the price as a whole has been only fair. Cantaloupe planting has already started, and it is estimated that about 2500 acres will be grown this year.

Station work performed during the month consisted of plowing cotton and grain sorghum stubble plats on the rotations, leveling plats for planting cotton, building hay and stalk shed, pruning ornamentals and small fruits, general irrigating, cultivating, and hauling.

Edward G. Noble.

WEEKLY REPORTS
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Newlands

The following meteorological data were recorded at this station for the six-week period ending March 19: Mean maximum 54.2, maximum 67 on March 7; mean minimum 24.7, minimum 13 on March 16 and 19. There was .06 of an inch of rainfall during this period, distributed as follows: .03 inch on the 8th, .01 on the 9th, and .02 on the 18th.

The field work has consisted of plowing and harrowing, and repairing of irrigation ditches and boxes. Oats have been planted on Field G and wheat in the rotation plats on Field E.

Mr. Hunter, of the Bureau of Agricultural Economics, was a station visitor during this period. He was obtaining data on feeding dairy cows rations of alfalfa hay and grain as compared with feeding alfalfa hay alone.

The following results were noted in another veal-feeding experiment:

Weight of veal at beginning of experiment	96 lbs.
" " " " end of experiment	200 "
Gain in weight	104 "
Whole milk consumed	22 gallons
Skim-milk "	54 "
Calf meal fed	26 "
Value of whole milk	$4.40
" " skim-milk	1.08
" " calf meal	.91
Total	$6.39
Sale price of 130 lbs. dressed veal @10¢ lb.	$13.00
Total cost of feed	6.39
Profit	$ 6.61

Comparative Weather Report for the Month of March, 1927

	1927	Avg. for 21 years
Temperature, mean maximum.....	57.9	58.9
" , " minimum	26.6	27.6
" , mean	42.2	43.2
" , highest	70.0	73.8
" , lowest	13.0	15.8
Precipitation, inch	.13	.39
Wind, miles per hour	3.19	4.29
Evaporation, inches	3.40	4.01
Days, clear	11	18.1
" , partly cloudy	6	6.9
" , cloudy	14	6.1

E. W. Knight.

San Antonio

The meteorological data for the five-week period ending March 19 are summarized in the following table:

Week ending	Temperatures			Precipitation		Sky		
	Max.	Min.	G.D.R.	Inches	No. of days	Clear	Partly cloudy	Cloud
Feb. 19	86	27	49	Tr.	1	3	4	0
" 26	90	35	38	0.05	1	1	5	1
Mar. 5	78	28	30	0.15	4	2	2	3
" 12	76	38	28	1.15	4	1	2	4
" 19	87	40	46	0.81	1	2	3	2

Temperatures during the last half of February were well above normal with the exception of three days--February 18, 19, and 20, during which time the minimum for the month was recorded. The mean temperature for February was 59.6 as compared with 54.9, the average mean of February temperatures for the past twenty years. All February mean temperatures recorded during the preceding twenty years have been lower than in 1927 with two exceptions. Rainfall during the last half of February was negligible. The total for the month was 1.84 inches, which is practically normal. Temperatures for March to date have been about normal, while the rainfall has been well above the average.

Winter grains and flax made excellent growth through the first two-thirds of February, but by the first of March most fields were suffering from lack of moisture and the customary large cracks were appearing. Oats and wheat on the more rankly grown plats showed a very decided yellow color and had fallen badly when a good rain of 1.14 inches occurred on March 7.

The relatively mild winter has been favorable for insect activity. Insects which have been observed to be unusually serious are harlequin cabbage-bugs, diabroticas, cutworms, ants, and plant lice. Aphids (not greenbugs) became exceedingly numerous in barley plantings and only moderately plentiful in other small grain plats during the cool, wet weather the first part of February and again the first ten days of March. The warm weather which followed these periods caused the parasites to become effective and serious damage by the lice was prevented in most cases.

Leaf-rust infection was first noticed in the small grain varieties on March 15. All oats were about equally infected and were worse than other grains. The infection in the wheat varieties was slightly less than in the oats, except in the variety Kubanka in which only a trace could be found. A trace only could be found in the barley and rye plats also.

The farmstead driveway was resurfaced with caliche gravel during the period covered by this report. Scheduled February plowing and the plowing under of green manure on rotation plats was completed.

Station activities other than those indicated above have included spraying orchards, nurseries, and ornamental plantings; cultivation of orchards and fallow fields and plats; and cleaning the farm residence sewerage system.

San Antonio (continued)

The following spring plantings have been made:

Date	Crop	Experiment	Location
March 1	Corn	Rotation and tillage	Rotation plats
" 7	Milo	Rotation and tillage	Rotation plats
" 14	Corn	Variety test	C-3
" 14	Corn	Row spacing	C-3
" 15	Sorgo (broadcast)	Rotation and tillage	Rotation plats
" 17	Sorgo (4.1' rows)	Rotation and tillage	Rotation plats
" 18	Sorghum	Variety test	C-4
" 19	Broomcorn	Variety test	C-6

Corn and milo on rotation plats emerged to excellent stands.

Dr. H. E. Ewing, Associate Entomologist in Charge of Ectoparasites and Mites, Office of Taxonomy, Bureau of Entomology, visited the station March 19 and collected specimens of scorpions.

Geo. T. Ratliffe.

Yuma

During the month of March the following meteorological data were recorded: Maximum temperature 94, mean maximum 78.4; minimum 33, mean minimum 40.9; greatest daily range 49; total precipitation .24 inch; 21 days were clear, 5 days were partly cloudy, and 5 days were cloudy.

Except for two periods of high winds, weather conditions have been very favorable for planting. Much of the cotton land has been irrigated and planting has continued since the middle of the month. The acreage and varieties will not change materially from last year. Cantaloupe planting continues in the Yuma Valley; it is estimated that about 3,000 acres will be devoted to this crop. Lettuce shipments continue; between 400 and 500 carloads have been shipped from the Project to date.

Considerable interest in pecan planting has been shown this spring on the Project. Several nurseries have made plantings to provide trees for extended plantings in the future. It is also planned to place on the market several hundred acres of land planted to pecan trees.

Station work performed during the past month has included building a hay and stock shed, planting cotton on the irrigated rotations, harvesting the first cutting of alfalfa hay, moving pomegranates from C-18 to B-21, pruning and pollenating date palms, general irrigating, cultivating, and hoeing.

Several hundred plants of small fruits and ornamentals have been distributed to unit holders. The Pima cotton on the irrigated rotations has emerged with an excellent stand. The barley and wheat varieties and also those plats on the rotations are beginning to head.

On March 22 the pigs used for pasturing work were placed on the rotations.

Edward G. Noble.

WEEKLY REPORTS
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Huntley

Favorable weather conditions occurred during the first 10 days of April and good progress was made in field work. On the project, most of the early grain was seeded and preparation of much of the land for sugar beets was accomplished. Field work was interrupted by rainfall, which was almost continuous during the week ending April 17. This precipitation occurred mostly in the form of snow, and the total amount of rainfall recorded was 2.78 inches. This moisture came at a very opportune time since the soil was rather dry after a period of drouth and high winds.

The beet acreage on the Huntley Project will amount to about the same as in 1926 with a total of about 4,700 acres. The contract minimum price is again $8.50 per ton, but is provisional, however, on changes in tariff schedules on raw sugar.

A considerable amount of alfalfa hay was shipped from the project during the winter and spring months. The farm price for this hay was from $8.00 to $10 per ton.

Winter wheat on dry lands adjacent to the project is generally in good condition, although recent reports indicate that some damage might result from an invasion of the army cutworm.

Mr. G. A. Rassley has recently been employed as Assistant County Agent. His work will be in cooperation with the Office of Demonstrations on Reclamation Projects, and most of his time will be spent on the Huntley Project.

Station visitors during the week were Professor Clyde McKee and Louis Vincke of the Montana State Experiment Station.

Dan Hansen.

Newlands

The following meteorological data were recorded at this station for the four-week period ending April 10: The mean maximum temperature was 61, with a maximum of 70 on the 23d and 24th of March; mean minimum 29, minimum 15 on March 20. There was .41 inch of rainfall.

The spring work during this period has been as follows: Plowing the orchard, preparing D-1 for seeding to sugar beets, planting orchard trees, whitewashing fences, and spraying the orchard.

The old garden site on Field B has been worked over and seeded to wheat. Later alfalfa will be drilled into the growing wheat. Plats B-5 and B-6 have been seeded to grasses. It is planned to use these plats for several years as pasture in some feeding experiments. Plats B-3 and 4 have been seeded to rye and later will be seeded to sweet clover. These plats will also be used for pasture.

Some plantings have been made of berries in an endeavor to determine what varieties can be adapted to local conditions. The fruit trees that were planted were for the purpose of filling out vacancies in the orchard.

Newlands (continued)

The report for the three-week period ending April 30:

The meteorological data for April 1927 as compared to the 21-year average for this month follow:

	1927	21-year average
Temperature, mean maximum	65.4	66.4
" , " minimum	32.2	34.5
" , mean	48.8	50.4
" , highest	87.0	80.6
" , lowest	13.0	20.7
Precipitation, inches	.34	.55
Wind, miles per hour	3.83	5.01
Evaporation, inches	5.38	5.97
Days clear	15	17.3
" partly cloudy	7	6.7
" cloudy	8	6.0

The following field plantings have been made: Barley was seeded on D-1 and on F. Oats were seeded on F-4, 5, and 6. Wheat was seeded on F-2, 3, and 7. Alfalfa was drilled into the grain on B-7 to 22, inclusive, and on F-2, 3, 4, 5, and 7. Sweet clover was seeded in the rye on B-3 and 4. Grass was planted in B-5 and 6. Plantings of turnips, parsnips, carrots, beets, onions, radishes, and peas have been made in the garden.

There has been a general irrigation during this period.

The gardener has set out some 3000 cuttings of poplars and transplanted several thousand tomato plants.

E. W. Knight.

San Antonio

The meteorological data for the six-week period ending April 30 are summarized by weekly periods in the following table:

Week ending	Temperatures Max.	Min.	Mean	G.D.R.	Precipitation Inches	Days*	Sky (days) Clear	P.Cloudy	Cloudy
3-26	80	33	57.2	37	.14	2	4	1	2
4- 2	91	49	73.7	41	.00	0	2	1	4
4- 9	93	67	79.9	24	.00	0	1	5	1
4-16	91	46	72.9	36	.57	3	2	2	3
4-23	90	40	68.6	35	1.18	3	1	3	3
4-30	92	49	70.8	38	tr.	0	3	3	1

*Number of days on which a measurable quantity of water fell.

Temperatures throughout March were practically normal. A freeze which occurred the night of the 21st (minimum recorded at instrument shelter 33° F.) killed some tender vegetation in the lower-lying sections. The tips of sorghum and corn plants in the rotation experiments were killed and the stands of milo on all plats were appreciably thinned by the killing of many plants. This reduction of stand was not sufficiently severe to adversely affect the crop except on one plat on field A-6. As this plat retained a stand of less than 50 per cent, it was disked out and replanted on March 29. No important damage to fruit was reported as resulting from this freeze.

San Antonio (continued)

Temperatures during the first ten days of April were exceptionally high, the mean for this period being 78.5 degrees. The remainder of April more nearly approximated normal, with a resultant mean temperature for the month of 73.1, which is 4.8 degrees higher than the average mean temperature for this month as recorded during the preceding twenty years.

Rainfall recorded for March was slightly in excess of normal, while that for April was barely more than half the 20-year normal. A deficiency of 1.57 inches of precipitation has accumulated for the first four months of this year as compared with the 20-year average (1907 to 1926). A large percentage of this year's rainfall has been received in such small and widely separated showers as to be almost useless from an agricultural standpoint. A straight, hard, north wind which occurred between 5:45 and 6:00 o'clock the morning of April 21 was accompanied by a brilliant electrical display, a near-cloudburst, and a trace of hail. The total rainfall of 1.05 inches occurred in about ten minutes and was mostly lost by run-off except in relatively flat fields which were in rough, loose condition. An occasional bruised cotton leaf was about the only damage noted from the hail. This storm was decidedly local.

The combination of high temperature and ineffective rainfall has been severe on all winter crops. Small grains in the vicinity of the station are practically a complete failure, and non-irrigated meadows and pastures are very short. In the hill country north and west of San Antonio it is reported that small grains have suffered very little, if at all, from lack of moisture, but that the rust infection is unusually severe. Spring planted row crops on late-summer, fall, or early winter prepared fields are not specially in distress to date, but broadcast fields, such as cane and sudan grass, and some row crops planted in spring-plowed land are seriously in need of a generous, soaking rain.

The following plantings have been made during the period covered by this report:

Field	Crop	Experiment	Date
C-6; ABC-7	Sorgo	Feed production	------
Rotation plats	Cotton	Rotation and tillage	April 7
C-5	Cotton	Rootrot-fallow	" 13
D-3	Cotton	Variety and spacing	" 15
F-3	Cotton	Cooperative series	" 16
Herbst tract	Cotton	Breeding	" 16

In addition to operations in connection with making the above plantings, station activities have included cultivation of all nurseries, orchards, row crops, and fallow fields; thinning of all corn plantings and the sorghum variety test; general weeding and chopping of Johnson grass on rotation plats and miscellaneous fields; harvesting Johnson grass for hay from field AB-8 and waste lands; and scheduled soil moisture samplings. Rotation oats-for-hay were harvested April 18, and alfalfa on field C-4 was cut April 29. The earliest varieties of flax and of barley were harvested during the last week of April.

Mr. A. C. Dillman, Associate Agronomist in Charge of Flax Investigations, spent the week of April 5 to 11 at the station checking up on experiments being conducted for his office. Mr. D. R. Hooton, Assistant Pomologist in the office of Cotton, Rubber, and other Tropical Plants, was at the station April 14 to 16, inclusive, making cotton plantings for his office.

Geo. T. Ratliffe

Scotts Bluff

The average maximum temperature for the week ending April 23 was 46, with a maximum of 54 on the 18th; the average minimum temperature was 24, with a minimum of 12 on the 21st.

Owing to the heavy snowfall which occurred on April 12, 13, and 14, no active field work has been carried on. Considerable manure had been hauled before the storm. It will not be possible to do any field work for several days even if weather conditions are favorable. Most of the week has been clear but not warm enough to melt the snow. The season will be from ten days to two weeks late.

Part of the lambs used in the feeding experiments during the winter were shipped on April 8 to Omaha, where they were sold at $15.85 per hundredweight. The rest of these lambs were shipped on April 22.

The average maximum temperature for the week ending April 30 was 71, with a maximum of 85 on the 28th; the average minimum temperature was 37, with a minimum of 22 on the 24th.

Active field work was begun on April 25, when the different plats were plowed, harrowed, leveled, and planted to sugar beets. All plats in Field K were planted by April 28 and Field E will probably be finished April 30.

Weather conditions have been very favorable all of the week. The ground is in fine shape and crops should start at once. Rather high winds prevailed Wednesday and Thursday.

James A. Holden.

Yuma

The meteorological data recorded during the month of April showed that the maximum temperature was 104, mean maximum 87.1; minimum 36, mean minimum 46.7; mean temperature for the entire month 66.9; greatest daily range 51; precipitation .17; 24 days were clear, 3 partly cloudy, and 3 cloudy.

The combination of high winds and cold weather from April 9 to 16 was a severe setback to the cotton plantings in many sections of the Project. In the lower Yuma Valley a frost was recorded on the 10th, which made replanting necessary in some fields. Although much of the early planted cotton emerged to a good stand, the growth was very slow, and desirable growing weather was not forthcoming until after the 19th. Many fields were irrigated to improve the stands. In comparison with the three previous years, weather conditions at cotton-planting time have been very unfavorable this spring.

The second cutting of alfalfa hay on the Project was started during the last of the month. Baled hay on board cars at Yuma is bringing about $14 per ton. The lettuce season wound up during the month with more favorable prices secured near the end of the season.

The present report on the flood conditions of the Colorado, as given by the local office of the Reclamation Bureau and the Weather Bureau, is to the effect that the precipitation on the watershed is about 30 per cent above normal. If the run-off starts early in the season and the weather continues warm, the crest of the flood will probably pass without endangering the levees. On the other hand, if unfavorable weather conditions prevail up river and the weather remains cool until late in

Yuma (continued)

April and May, followed by a hot spell, a high river is anticipated. Considerable work is being done at the present time on the levees to prepare them for any emergency.

Station work performed during the month included the cultivation of cotton in the irrigated rotations; planting the cooperative series and Tuxtla progeny plats; harvesting barley varieties; building new stock corrals; extending and repairing pipe lines; removing old stock shed and fences; pruning and pollenating date palms; general irrigating, cultivating, and hoeing.

Messrs. R. E. Blair and E. E. Kaufman, of the California State Department of Agriculture and the U. S. Department of Agriculture at Sacramento, California, visited the station on April 26.

Edward G. Noble.

W E E K L Y R E P O R T S
Of the Office Of
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Huntley

For the week ending May 21 the maximum temperature was 85, minimum 32, and precipitation 1.23 inches.

The spring season has been rather cold and backward, with an unusually high rainfall. The total precipitation during April and up to date in May has amounted to 6.81 inches, while the normal for this period is less than half this amount. Spring seeding has consequently been much delayed and will require several days to complete.

Some losses of stand of beets that were seeded early are reported. These stand losses are due to "black-root" resulting from the unfavorable weather conditions. Loss of stand of alfalfa due to winter injury is said to be rather serious, especially in the lower part of the valley. Grains, especially winter wheat on dry lands adjacent to the project, except in a few isolated cases of cutworm injury, are in excellent condition.

At the station, the seeding of crops, excepting corn and beans, was completed during the week.

Professor F. M. Harrington of the Montana State Station was a station visitor on May 17.

Dan Hansen.

Newlands

The following meteorological data were recorded at this station for the two-week period ending May 14: Mean maximum 72.9, maximum 92 on the 14th; mean minimum 38.3, minimum 29 on the 9th. There was no rainfall during this period.

The last of the field crops was planted during this period. A variety test of potatoes was planted on A-3. The varieties used were Netted Gem, Burbank, Pride of Multonomah, Quick Meal, and local potatoes.

A variety test of corn was also planted on A-3. This test included Rainbow Flint, Northwestern Dent, Wimple's Yellow Dent, De Wolf's Prolific, Wisconsin No. 7, Minnesota No. 13, White Pearl, and Early Murdock. Ensilage corn was planted on F-8 and D-5 and field corn on E-1, 2, 7, and 8.

On plats F-2, 3, 4, and 5 alfalfa was seeded into the grain crop previously planted.

In the garden sweet corn, melons, and cucumbers have been planted.

During this period the entire farm received an irrigation.

Mr. Cooley was a station visitor on May 12, 13, and 14. He was gathering data on the dairy experiment being conducted at this station and the various field experiments. Some time was spent in the field with him. Trips were made to several alfalfa fields that are heavily infested with aphids. The cool weather early in this month has allowed this pest to gain quite a foothold on some farms. In many places on these farms the first crop of hay will be small.

E. W. Knight.

San Antonio

The report for the two weeks ending May 14 is as follows:

Temperatures during the first ten days of May remained above normal, while the four following days were well below normal for this time of year. A maximum temperature of 103 was recorded for May 8. A summary of the meteorological data recorded during the two-week period ending May 14 follows:

Week ending	Temperatures				Precipitation		Sky (days)		
	Max.	Min.	Mean	G.D.R.	Inches	Days	Clear	P.Cloudy	Cloudy
May 7	96	61	81.0	30	0.0	0	1	4	2
May 14	103	55	75.2	27	1.51	2	1	3	3

All field crops, with the exception of cotton, were showing distress from lack of sufficient soil moisture when the best rain of the season occurred the night of May 12. A total of 1.50 inches of precipitation fell slowly and practically all went into the ground. This rain came just in time to save the corn crop, which was curling badly, and will appreciably increase the yield of grain sorghums. Corn is tasseling from ten to fifteen days earlier than usual this year. Milo is heading shorter and earlier than usual and that on the rotation plats was about half in bloom when the rain came. Hay sorghums were burning badly in many fields.

A light infestation of aphids and thrips has been present on the cotton with the result that many of the leaves, as rapidly as they appeared, were badly crinkled and some died back to the petiole. It is believed the infestation is not severe enough to permanently damage the crop in case favorable growing weather prevails another week.

The harvesting of all flax in the classification nursery, the field variety test, and the first date-of-seeding plat has been completed. With the exception of one plat (biennially cropped) all oats-for-grain plats were too short to cut with the binder and were accordingly harvested with the mowing machine and hay rake. Some light grain will be obtained from one oat plat, but on all the others the heads failed to fill owing to drought.

Station activities have included spraying orchards, vineyards, and nurseries; cultivating field crops, orchards, rotation alleyways, field roads, and fallow; rat-proofing and disinfecting the office building garret; and miscellaneous weeding.

Geo. T. Ratliffe.

Scotts Bluff

The average maximum temperature for the week ending May 7 was 65, with a maximum of 80 on the 2d; the average minimum temperature was 37, with a minimum of 20 on the 5th. Rainfall was .14 of an inch on the 1st, .19 inch on the 6th, and .09 inch on the 7th.

Weather conditions have been quite favorable for field work most of the week, and the various plats have been planted to oats and wheat. A drizzling rain began on the 4th and continued through the rest of the week, making field work impossible. It will be of great benefit to planted crops such as sugar beets and small grain.

Scotts Bluff (continued)

Some ground has been plowed for Early Cobbler potatoes, which will be planted as soon as weather conditions permit.

For pasturing work, sixty shotes were put on alfalfa with a small corn ration, also 22 sows and gilts with their pigs.

The average maximum temperature for the week ending May 14 was 58, with a maximum of 68 on the 8th; the average minimum temperature was 34, with a minimum of 5 on the 10th. Precipitation for the week amounted to 1.14 inches.

On Saturday night a heavy rain started, which turned to snow Sunday afternoon. This storm was in many respects worse than the blizzard during April, and considerable loss in livestock which had just been put out on pasture was sustained.

No field work at the station was possible until Wednesday. The various plats were plowed for potatoes, and planting will begin right away. Barley and sweet clover were also planted.

The farm ewes with their lambs were put on pasture.

The average maximum temperature for the week ending May 21 was 76, with a maximum of 89 on the 18th; the average minimum temperature was 44, with a minimum of 40 on the 15th. Precipitation was .35 inch.

Weather conditions have been quite favorable for field work most of the week. High winds have been prevalent a part of the time. Plats planted to sugar beets were rolled to destroy the crust formed by recent rains. Small grain has come up to a good stand and is in good condition. Alfalfa is showing good growth.

The average maximum temperature for the week ending May 28 was 74, with a maximum of 76 on the 26th; the average minimum temperature was 42, with a minimum of 34 on the 23d.

Weather conditions have been quite favorable for the week, although rather high winds have been prevalent. Rain is needed to start the young sugar beets to growing.

Irrigation ditches were cleaned out preparatory to irrigating, and some alfalfa has been watered. Station work is well up to date. Spring pigs were weaned this week and put on pasture.

Mr. H. O. Werner, Professor of Horticulture at the College of Agriculture, State University, and Mr. McIntyre spent Wednesday and Thursday at the station, where they prepared and had planted, potatoes for experimental work.

James A. Holden.

Yuma

During the month of May the meteorological record shows that the maximum temperature was 113°, mean maximum 95.8°; minimum 44°, mean minimum 52.8°; and mean temperature for the entire month 74.3°; greatest daily range 52; precipitation 0; 28 days were clear and 3 days partly cloudy.

In addition to the abnormally high temperatures during this period, there has also been considerable wind. The combination of these two factors has caused newly planted cotton to dry out rapidly. These weather

Yuma (continued)

conditions following the cooler weather in April have not made growing conditions ideal for cotton this spring. It has been observed that the stands so far are considerably below normal, with much grass and weeds in evidence resulting from applications of water given to improve the stands.

The wheat and barley crop on the project, of which there was an increased acreage this spring, has been harvested. Although some rust damage was reported, the loss is much less than was experienced last year.

The second cutting of alfalfa hay was harvested during the month, and most of the acreage has now been turned to seed. Hay prices have materially dropped; the present quotations are around $13.00 per ton baled and on board cars at Yuma.

Although a few shipments of cantaloupes have been made, the bulk of the crop will not start until about the 10th of June. A small acreage of early watermelons was raised, and one carload shipment has already been made.

Considerable interest is manifested locally in the flood conditions of the Colorado River. During the latter part of the month the discharge at Yuma was approximately 70,000 second-feet. The crest of the first part of the flood is set for June 3, with an estimated run-off of 75,000 second-feet. Present reports of conditions up the river indicate that the flow will decrease for ten days or two weeks, with a probable rise thereafter. No figures as yet are available as to the estimated flow for the next crest. The condition of the project levees is reported to be very favorable.

Station work performed during the month consisted of harvesting and threshing barley and wheat on the irrigated rotations and the variety tests; harvesting vetch on the plot variation test; cleaning and repairing ditches; general irrigating, cultivating, and hoeing. The yields of barley on the irrigated rotations, with a comparison of results obtained in previous years, is given in the following table.

Yields of Barley at the U. S. Yuma Field Station from 1923 to 1927, inclusive

Rotation No.	Yields of grain in bushels per acre					
	1923	1924	1925	1926	1927	Average
8	64.8	30.8	16.5	23.0	11.9	29.4
9	49.2	25.4	21.6	30.8	10.5	27.5
11	22.8	26.0	22.2	16.3	20.0	21.5
12	18.9	15.0	2.9	6.3	8.0	10.2
24	15.0	4.6	7.1	8.2	5.7	8.1
30	9.7	10.4	2.8	6.4	4.3	6.7
42	46.5	23.2	14.3	17.9	16.4	23.7
46	45.3	25.3	31.0	43.3	30.3	35.0
50	28.7	17.4	31.5	22.7	19.7	24.0
60	24.6	19.0	17.9	26.1	21.2	21.8
63	27.3	12.5	6.1	20.6	10.8	15.5
Maximum	64.8	30.8	31.5	43.3	30.3	35.0
Minimum	9.7	4.6	2.8	6.4	4.3	6.7
Average	32.1	19.1	15.8	22.2	14.4	20.3

Edward G. Noble.

WEEKLY REPORTS
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Belle Fourche

Under date of June 11, Mr. Aune reports as follows:

The spring has been rather discouraging for getting crops planted. During the first half of April there was a total of 45 inches of snow. The total precipitation for April, including the last day of March, was 4.78 inches, with rain on 14 days. In May there was rain on 22 days with a total precipitation of 6.96 inches. Early in May a six-day rain, ending with a snow-storm, caused considerable loss of cattle and sheep on the range. June has opened up with five days of rain and a total precipitation of 1.19 inches to date. It is hoped that the rain will let up before haying begins.

Most of the crops are in with the exception of the potatoes in the irrigated rotations, of which about half are planted.

The crop conditions on the project are really better than could be expected, particularly the beet acreage, the last report on which showed that at least 80 per cent of the acreage signed has been planted. If the weather is favorable from now on, there should be a normal crop. The sugar factory is coming along according to schedule and will be completed in time to care for the 1927 crop.

The extra session of the State Legislature will meet on June 22. It is thought that the appropriation bill as passed last winter will go through. It provides $4,000 for livestock work at this station.

The coming of the President to the Black Hills is considered quite an event for the State. The Newell Community Club and the Belle Fourche Irrigation District Board are making every effort to get the President to attend the Farm Picnic on July 16.

The National Editorial Association will tour the Hills next week and on June 20 will go over the project.

Beyer Aune.

Huntley

The rainfall during the week ending June 18 amounted to .32 inch; the maximum temperature was 80 and the minimum temperature 40. The total rainfall during April, May, and June (to date) was 9.34 inches.

The unusually high precipitation resulted in delayed seeding and beet thinning, and the beet crop at this time is in only fair condition. Loss of stands due to black root has been more serious than in former seasons. The first crop of alfalfa will probably be light, but grains are in excellent condition. No irrigation has as yet been necessary.

Station work during the week included cultivation of corn and beets, beet thinning, and ditching.

Dan Hansen.

Newlands

During the three-week period ending June 4 the work at the station has consisted of cultivating corn, beets, and orchard, and the usual irrigating.

Newlands (continued)

This spring has been very backward in plant growth due to the exceptionally cool weather and crop pests. The comparative weather report for the month of May of this year and the average for 21 years (given below) shows a mean temperature of 2 degrees below normal. This does not account for the slow growth of crops. There were several real cool days followed by a few hot ones and then more cold ones. The cool weather has so favored the cutworms and aphids that the first crop of hay throughout the project will be decidedly short. Estimates run as high as a 50 per cent decrease in yield. The grain and sugar beets have been favored by the cool weather and are showing up well.

Some plantings of beans, pumpkins, tomatoes, and cabbages were made in the garden during this period.

The weather has been so cool that it has been necessary to replant about half of the field corn.

Comparative Monthly Weather Report for May

	1927	21-year average
Temperature, mean maximum	71.7	73.7
" , mean minimum	38.7	40.8
" , mean	55.2	57.3
" , highest	93.0	88.1
" , lowest	29.0	28.2
Precipitation, inches	.15	.48
Wind, miles per hour	4.64	4.32
Evaporation, inches	7.38	7.94
Days clear	19.0	18.1
" partly cloudy	8.0	8.1
" cloudy	4.0	4.5

E. W. Knight.

San Antonio

Report for the four weeks ending June 11.

The weather for the month of May 1927 was notable for high maximum and mean temperatures, hot burning winds, and shortage of effective rainfall. On the 8th the maximum temperature equalled the highest ever recorded at this station for May. The highest temperature ever recorded at the San Antonio office of the Weather Bureau for May occurred the 28th and 29th, on which dates the maximums at the Field Station were 105 degrees. The mean maximum temperature for the month was 81.1, which was 5.9 degrees above normal and 3.1 degrees higher than for any May during the preceding 20 years. Hot winds of relatively high velocity, remindful of the drying winds anticipated during August, were of frequent occurrence and rapidly dissipated the low supply of moisture. A soaking rain of 1.50 inches the 12th of the month temporarily relieved the drought condition prevailing, but the extremely trying weather which followed soon put all vegetation in distress.

Beginning June 4 a rainy period of four days yielded a total of 2.37 inches precipitation and a greatly appreciated drop in temperature. Meteorological data recorded for the period covered by this report are summarized by weeks in the following table:

San Antonio (continued)

Week ending	Temperatures Max.	Min.	Mean	Precipitation Inches	Days	Sky Clear	P. Cloudy	Cloudy
May 21	94	61	80.4	None	--	2	4	1
" 28	105	71	85.0	.21	1	0	7	0
June 4	105	67	86.1	1.16	1	2	4	1
" 11	94	64	78.1	1.21	3	1	4	2

In the last report from this station it was stated that the rain of May 12 saved the corn crop. This proved true in a few fields which had felt the preceding drought less severely. In the majority of fields the drought had so weakened the plants that, although growth of the plants was renewed, the pollen was lacking in vitality and very little grain set.

Sorghum midges have been unusually scarce to date with the result that the best set of grain of all varieties of sorghums obtained during the past seven years was secured. As no campaign has been waged against birds (for financial reasons) an exceptionally great amount of damage has resulted from them, and it will be necessary to harvest all plats at the earliest possible date and to use only selected portions for computing comparative yields.

The first seedling cotton plants to die of rootrot were found May 31, and from appearances the first of these probably died as early as May 28. Stand counts and counts of plants dead of rootrot on the rotation plats were made June 1 and 2. A total of 213 dead plants were found on ten plats, the remaining twenty plats showing no signs of the disease. The early mortality is, as usual, very much greater on the four continuously cropped plats than on those where rotation of crops is practiced.

Cotton boll-weevils have been present in the fields since early in May, but damage by them has been negligible to date. No signs of the cotton flea hopper have been observed on the station, and all cotton is squaring freely.

All small grains and all the flax from the variety and time-of-planting tests have been threshed and recleaned. Only two rotation plats produced grain: A4-5, biennially cropped, at the rate of 20.1 bushels per acre; and B5-8, continuously cropped, at the rate of 2.9 bushels per acre. Two fields were used for the small grain variety test: A-3, where one plat each of six varieties of oats, seven varieties of barley, five varieties of wheat, and one variety of rye were planted following a year of fallow; and D-4, where two plats of each of the above varieties were planted following a winter crop of flax and summer fallow. On Field A-3 oats yielded from 8.9 to 30.5 bushels per acre, barley 0.9 to 19.7 bushels, wheat 1.7 to 10.0 bushels, and rye 4.5 bushels per acre. The D-4 planting was practically a failure owing to drought, and only 8 plats out of 38 were threshed.

Notwithstanding the fact that the variety test with flax was planted on a field heavily infested with Johnson grass, this crop on the whole yielded better than the small grains. Ten varieties were planted in triplicated 1/40 acre plats with a check variety every fourth plat. Yields were at rates of from 4.2 to 9.2 bushels per acre, with an average yield for all 37 plats of 7.5 bushels.

San Antonio (continued)

Cotton plantings in the rotations and the rootrot-fallow experiments on C-5 were thinned May 16 to 20, inclusive. Cotton plantings made on fields D-3 and F-3 and the Herbst tract were thinned May 24 and 25 under the direct supervision of Mr. H. C. McNamara, Assistant Agronomist in the Office of Cotton, Rubber and Other Tropical Plants.

Field activities have included the following: Cultivation of all cotton, orchards, nurseries, gardens, and fallow fields; plowing of "May" rotation plats; miscellaneous weeding of rotation plats and all cotton plantings; soil moisture sampling; and general care of grounds.

Official visitors during the period of this report were Homer C. McNamara, May 24 and 25, and C. J. King, June 2; both of the office of Cotton, Rubber and Other Tropical Plants.

Detailed summaries of the yields from the flax variety and time-of-planting tests, and for the A-3 small grain variety test are given in the following tables.

Small Grain Variety Test, U. S. San Antonio Field Station
Field A-3. 1927. Seeded November 23, 1926.

Variety	Rate of seeding	Date of maturity	Yield per acre: Grain	Yield per acre: Straw	Weight per bu.
	lbs. acre		bushels	tons	lbs.
Oats:					
Selection 1913	90	5/3	29.1	1.43	20.0
Texas Red Rustproof	90	5/3	30.5	1.58	23.5
Ferguson No. 71	90	5/3	27.7	1.50	21.0
Lee	75	5/5	16.9	1.05	24.0
Fulghum	45	5/5	8.9	1.05	23.0
Dwarf Culberson	100	4/23	10.3	.30	24.5
Barley:					
Hannchen	60	4/17	14.4	.68	44.0
Orel	120	4/28	5.3	.75	39.0
Wisconsin Winter	110	4/28	1.6	.23	36.0
Tennessee Winter 3543	100	5/18	0.9	.30	----
Tennessee Winter 3546	100	5/16	1.9	.23	----
Texas Winter	72	4/18	19.7	.60	39.0
Stavropol	100	4/18	13.8	1.35	39.0
Wheat:					
Kubanka	95	5/4	10.0	1.35	59.0
Mediterranean	120	5/19	1.8	.38	52.5
Kanred	100	5/19	1.7	.53	53.0
Blackhull	90	5/19	3.3	.68	55.0
Harvest Queen	90	5/18	3.0	.23	53.5
Rye:					
Texas Winter	120	5/9	4.5	.30	53.0

San Antonio (continued)

FLAX VARIETY TEST. Yield of flaxseed per acre in bushels; relative yield expressed as per cent of check variety; and stand of plants in M's per acre. Field C-6, 1927. Each plat included 1/40 acre.

Plat No.	Variety	C.I. No.	Yield	% of check[1]	Stand	Average Yield	Average % of check	Average Stand
1	N. D. R. #114	13	7.0	---	1240	7.7[2]	100.0	1542[2]
2	Bolley's #720	318	8.3	116.1	1874	8.0	107.1	2149
3	N. D. R. #52	275	8.0	111.9	1922	8.1	108.9	1575
4	Linota	244	8.2	114.7	1894	7.9	106.7	1728
5	N. D. R. #114	13	7.3	-----	1260	---	-----	----
6	Selection 4-1	260	7.9	104.0	1436	8.6	111.6	1517
7	Reserve	19	6.9	90.8	1692	7.1	91.8	1633
8	Long #79	280	4.2	55.3	552	5.0	64.6	622
9	N. D. R. #114	13	7.9	----	1792	---	----	---
10	Morteros	107	8.0	106.8	996	7.7	97.0	947
11	Rosquin	109	6.5	86.6	1346	7.2	90.3	1317
12	Selection 34-34	267	6.4	85.4	1016	7.6	94.7	1053
13	N. D. R. #114	13	7.1	----	1704	---	----	----
14	Bolley's #720	318	7.5	103.4	2498	---	----	----
15	N. D. R. #52	275	8.1	111.7	1580	---	----	----
16	Linota	244	7.6	104.8	1748	---	----	----
17	N. D. R. #114	13	7.4	-----	1480	----	----	----
18	Selection 4-1	260	9.2	118.7	1490	---	----	----
19	Reserve	19	7.3	94.2	1566	---	----	----
20	Long #79	280	5.2	67.1	552	---	----	----
21	N. D. R. #114	13	8.1	-----	1676	---	----	----
22	Morteros	107	7.6	93.8	846	---	----	----
23	Rosquin	109	7.2	88.9	1470	---	----	----
24	Selection 34-34	267	7.5	92.6	858	---	----	----
25	N. D. R. #114	13	8.1	----	1434	---	----	----
26	Bolley's #720	318	8.1	101.9	2074	---	----	----
27	N. D. R. #52	275	8.2	103.1	1224	---	----	----
28	Linota	244	8.0	100.6	1542	---	----	----
29	N. D. R. #114	13	7.8	-----	1446	---	----	----
30	Selection 4-1	260	8.8	112.1	1626	---	----	----
31	Reserve	19	7.1	90.5	1642	---	----	----
32	Long #79	280	5.6	71.3	762	---	----	----
33	N. D. R. #114	13	7.9	----	1782	---	----	----
34	Morteros	107	7.5	90.4	1030	---	----	----
35	Rosquin	109	7.9	95.2	1134	---	----	----
36	Selection 34-34	267	8.8	106.0	1284	---	----	----
37	N. D. R. #114	13	8.7	-----	1602	---	----	----

1/ Yield of each variety divided by average yield of the two nearest check plats.

2/ Average of all ten check plats.

San Antonio (continued)

FLAX: TIME OF PLANTING. Pertinent dates and yield of flaxseed and of straw.
U. S. San Antonio Field Station. 1927.

Plat No.	Date of Planting	Date of Emersion	Date of Maturity	Yield per acre Flaxseed	Yield per acre Straw[1]
				bushels	tons
1	Dec. 17	Dec. 26	May 2	5.7	.48
2	Jan. 5	Jan. 16	May 16	6.5	.43
3	Jan. 29	Feb. 4	May 19	8.6	.96

1/ Straw from plats 1 and 2 was practically air dry; that from plat 3 was not.

Geo. T. Ratliffe.

Scotts Bluff

The average maximum temperature for the week ending June 4 was 68, with a maximum of 81 on May 29; the average minimum temperature was 44, with a minimum of 35 on May 30. Precipitation for the week was 1.58 inches.

Considerable rain has fallen during the week, delaying field work. Warm, dry weather is greatly needed at this time. Small grain and alfalfa are looking very good, but sugar beets are growing very slowly.

Mr. Goss and Mr. Koch arrived on Wednesday from the College of Agriculture, Lincoln, Nebraska, and are preparing and planting potatoes for experimental work. Mr. Koch will be stationed here for the summer.

The average maximum temperature for the week ending June 11 was 61, with a maximum of 92 on the 9th; the average minimum temperature was 50, with a minimum of 45 on the 5th. No precipitation was recorded.

Weather conditions have been good all of the week. Alfalfa plats have been irrigated and all crops show steady growth due in large measure to warmer weather. Sugar beets in the various plats have been thinned and blocked. It has been necessary to break the crust again on the beet plats.

Spring pigs were vaccinated on Friday and will soon be used in pasturing experiments.

The average maximum temperature for the week ending June 18 was 62, with a maximum of 78 on the 18th; the average minimum temperature was 45, with a minimum of 40 on the 15th. The precipitation was .85 inch.

The weather during this week has been cloudy and cool for the most part. Small grain and alfalfa have shown steady growth, but sugar beets are rather backward. The rest of the potato plats for experimental work were planted. The beets have been cultivated. Irrigation has been continued on alfalfa and the cow pastures.

Mr. A. C. Cooley, Agriculturist in charge of Demonstrations on Reclamation Projects, has spent several days at the Station.

Fifty spring lambs, averaging in weight about 80 pounds each, were shipped on the 17th to Omaha.

Scotts Bluff (continued)

The average maximum temperature for the week ending June 25 was 82, with a maximum of 97 on the 24th; the average minimum temperature was 50, with a minimum of 42 on the 22d. The precipitation was .15 inch.

Due to warmer weather, all crops are beginning to show better growth. Alfalfa on all plats was cut and put up this week. Small grain is looking very good and is being irrigated for the first time.

A number of representatives of the National Editorial Association, who were touring the North Platte Valley, called at the farm one day during the week.

James A. Holden.

Yuma

The meteorological data recorded for the month of June show that the maximum temperature was 111, mean maximum 101; minimum 51, mean minimum 60.9; mean temperature for the entire month 73.2; greatest daily range 49.5; precipitation, none; 27 days were clear, 2 partly cloudy, and 1 cloudy.

The high temperatures of June 23 and 24 terminated a five-week period of very pleasant and ideal growing weather for crops. The last hot period has also been accompanied by high humidity. Summer thunder storms have occurred in the higher sections of Arizona, but no rain has been recorded locally.

Cotton has made a very good growth during the month; many fields are well enough advanced to discontinue cultivation.

Alfalfa seed has set very well in most sections of the project. Some threshing has already been done in the Gadsden vicinity, but the bulk of the crop will not be cut until after the middle of July.

Much of the farming activities on the project at the present time are confined to planting grain sorghum, cultivating cotton, and harvesting the cantaloupe crop. The peak of production has probably been passed; about 40 carloads per day were shipped out during the last week of June. The prices obtained by growers are reported to be fair.

Flood conditions on the Colorado River during June have not caused much anxiety to the people on the project. The run-off, having started early this year, has maintained a sufficient flow to detract from the possibility of a high crest. The maximum discharge reported so far has been less than 80,000 second-feet. All levees and protection works are still in good shape, it is said.

Station work performed during the past month included the harvesting of the third cutting of alfalfa hay, plowing winter grain stubble plats, cultivating cotton, cleaning ditches, repairing irrigation structures, irrigating, and hoeing.

R. E. Blair, of the California State Department of Agriculture, was a station visitor on June 26.

Edward G. Noble.

W E E K L Y R E P O R T S
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Newlands

The work at the station during the four-week period ending July 2 has consisted of cultivating and irrigating various crops and harvesting the first crop of hay.

Comparative Monthly Weather Report for June

	1927	21-year average
Temperature, mean maximum	84.0	83.8
" , mean minimum	47.4	47.3
" , mean	65.7	65.5
" , highest	94.0	96.7
" , lowest	36.0	35.9
Precipitation, inches	.12	.35
Wind velocity, miles per hour	3.14	3.65
Evaporation, inches	7.30	9.28
Days clear	19	22.2
" partly cloudy	6	4.3
" cloudy	5	3.5

The spring continues to be rather backward so far as growing weather for most plants is concerned. However, the weather seems to favor beets and grain, and these particular crops are in fine shape.

Some estimates have been made as to the effect of the cool weather and aphids on the yields of the first crop of alfalfa. To get an idea as to the amount of the decrease in yield, the total pounds harvested in 1926 on certain alfalfa plats at the station were compared with the amount cut on the same plats in 1927. The first crop in 1926 on this area amounted to 45,918 pounds, whereas on the same plats in 1927 it amounted to 19,410 pounds or only 42 per cent of the 1926 production. Not only was there a decrease in tonnage in the first crop, but haying was commenced two weeks later than in 1926.

Some further cooperative experiments have been made in hog feeding. The rations used were 5% skim-milk plus 2% barley; 10% skim-milk plus 1% barley; and in each case all the alfalfa meal the pigs could consume. The skim-milk feed was continued throughout the self-feeder stage as well as up to that stage. The statement that the pigs received 5% skim-milk and 2% barley means that each day 5 pounds of skim-milk and 2 pounds of rolled barley were fed for every 100 pounds of pigs. This will explain the headings in the following tables.

Newlands (continued)

Pigs on Alfalfa Meal With Varying Milk and Grain Rations

Item	Growing Period		Fattening Period		Both Periods	
	5% Milk 2% Barley	10% Milk 1% Barley	5% Milk	10% Milk	5% Milk	10% Mi
Group number	I	II	I	II	I	II
Number of pigs	6	6	6	6	6	6
Experiment begun	11/13/26	11/13/26	4/30/27	5/21/27	11/13/26	11/13/26
" ended	4/30/27	5/21/27	5/28/27	6/4/27	5/28/27	6/4/27
Number of days	168	189	28	14	196	203
Initial wt., lbs.	175.5	190.0	886.5	895.5	175.5	190.0
Final wt., lbs.	886.5	895.5	1207.0	1130.5	1207.0	1130.5
Gain, lbs.	711.0	705.5	320.5	235.0	1031.5	940.5
Daily gain, lbs.	4.23	3.73	11.42	15.80	5.27	4.64
Daily gain, %	.98	.83	1.30	1.67	1.02	.88
Grain fed, lbs.	1519.0	896.7	1425.0	794.0	2944.0	1690.7
Grain fed, % gain	213.0	127.0	445.0	348.0	285.0	180.0
Milk fed, lbs.	3812	8943	1418	1362	5230	10305
Milk fed, % gain	536	1268	442	580	507	1096
Alfalfa meal fed, lbs.	1050	1700	------	------	1050	1700
Alfalfa meal fed, % gain	148	241	------	------	102	150

Value of Gains in Weight of Pigs and Value of Feeds Consumed at Various Market Prices

Item	Growing Period		Fattening Period		Both Periods	
	I	II	I	II	I	II
A. Value of gain @ 8¢	$56.88	$56.44	$25.64	$18.80	$82.52	$75.24
B. " " " @ 8½¢	60.43	59.97	27.24	19.98	87.68	79.94
C. " " " @ 9¢	63.99	63.50	28.85	21.15	92.84	84.65
D. " " " @10¢	71.10	70.55	32.05	23.50	103.15	94.05
E. " " " @11¢	78.21	77.61	35.26	25.85	113.47	103.46
F. " " " @12¢	85.32	84.66	38.46	28.20	123.78	112.86
G. Value of barley @$1.50 cwt.	22.79	13.45	21.38	11.91	44.16	25.36
H. " " " @ 2.00 "	30.38	17.93	28.50	15.88	58.88	33.81
I. " " " @ 2.50 "	37.98	22.42	35.63	19.85	73.60	42.27
J. Value of hay @$10.00 ton	5.25	8.50	-----	-----	5.25	8.50
K. " " " @$20.00 "	10.50	17.00	-----	-----	10.50	17.00
L. Value of milk @1¢ gal.	4.38	10.28	1.63	1.57	6.01	11.85
M. " " " @2¢ "	8.77	20.57	3.26	3.13	12.03	23.70
BHJM Profit on Group	16.03	12.97	-4.52	.97	11.52	13.93
BHKM Profit on Group	10.78	4.47	-4.52	.97	6.27	5.43

Newlands (continued)

The following meteorological data were recorded at this station during the two-week period ending July 17: Mean maximum 92.4, maximum 98 on the 10th; mean minimum 49.2, minimum 41 on the 4th. There was no rainfall.

The farm work has consisted of cultivating the corn, beets, and orchard. During this period there have been two irrigations which covered all the plats on the farm.

The following table shows the results of another veal-feeding experiment.

Number of days veal was fed	42 days
Gain in weight during the period	76 lbs.
Whole milk consumed	182 lbs.
Skim-milk consumed	368 lbs.
Calf meal consumed	27 lbs.
Value of whole milk	$4.42
Value of skim-milk	.85
Value of calf meal	.95
Total	$6.22
Cost per pound gain	8.2¢

E. W. Knight.

San Antonio

There were no extremes of temperature during the six weeks ending July 16, and the mean temperature was close to normal for the period. Partly cloudy to cloudy weather prevailed, only five days being recorded as clear. Frequent rains continued until near the end of June, resulting in the heaviest precipitation recorded at the station for that month during the past twenty years. Notwithstanding the fact that cloudy, and sometimes quite threatening, weather has prevailed throughout the first half of July, only one small local shower occurred. All vegetation made luxuriant growth during the warm, wet weather of June; and, as field operations were severely hampered, the station fields became weedier, and the weeds attained greater size, than at any previous time known to the writer. This abundant growth, being very succulent, rapidly dissipated the soil moisture, and by the middle of July crops were suffering severely. A summary of the meteorological data recorded at the station for the six-week period is presented below, together with a summary of such data for the month of June.

Week ending	Temperatures			Precipitation		Sky		
	Max.	Min.	Mean	Inches	Days	Clear	Partly clo.	Cloudy
June 18	97	65	79.7	4.33	3	0	4	3
" 25	92	65	79.2	.56	2	0	1	6
July 2	95	69	80.9	.58	2	2	3	2
" 9	99	68	82.1	----	---	2	4	1
" 16	98	70	85.0	----	---	1	2	4
June 1 to 30, incl.	99	64	80.1	7.71	10	3	14	13

San Antonio (continued)

Bacterial blight, or angular leaf spot, of cotton became noticeable the latter part of June. Practically all leaves produced during the wet weather were affected, and a high percentage of them has now been shed. This condition is general throughout south central Texas. Boll weevils have multiplied rapidly and very few flowers are opening. Nearly full-grown bolls are carrying from 1 to 12 larvae. Cotton root rot has been making steady progress in the vicinity of San Antonio and is reported as being more severe than normally throughout this section of the State.

Harvesting operations have included the following:

- Milo from 14 rotation plats
- Sumac sorgo from 12 rotation plats
- All plats in the sorghum variety test except two plats of Honey sorgo which are very late
- Second crop alfalfa, Field C-4
- Rhodes grass, Fields A-3, B-3, and B-4
- Sudan grass from two rotation plats and from farm residence tract
- Johnson grass for hay, Field C-6 (after flax) and Field E-3 (after wheat).

Midge damage has been negligible this season with respect to all varieties except the extremely late Honey variety. Bird damage (principally sparrows) was unusually heavy and made it necessary to block out small sections of the less severely damaged areas on seven rotation plats to be used in obtaining comparable yield data. All shocks of grain sorghum to be threshed for yield data were covered with heavy caps made of burlap bags.

Corn is sufficiently matured for harvest and will be gathered as soon as station labor can be spared for that work.

Geo. T. Ratliffe.

Scotts Bluff

The average maximum temperature for the week ending July 2 was 84, with a maximum of 100 on the 27th of June; the average minimum temperature was 57, with a minimum of 47 on the 1st. The total precipitation during the week was 2.08 inches.

On Wednesday afternoon there was a very heavy wind-storm followed by hail. Although no damaging results from the hail were recorded at the station, it was very destructive on nearby farms. After the hail there was a very heavy rain, and on the 30th another heavy rain. These rains will be of great benefit to all crops, as hot winds before the rain had made the soil very dry.

All of the alfalfa from the different rotations was cut and stacked before the rain. Sugar beets, corn, and potatoes have all been cultivated and show good growth.

The average maximum temperature for the week ending July 9 was 89, with a maximum of 94 on the 8th; the average minimum temperature was 55, with a minimum of 47 on the 6th. The precipitation amounted to .29 inch.

Scotts Bluff (continued)

Dean E. A. Burnett, Mr. W. W. Burr, and Mr. Brokaw, Director of Extension Work at the College of Agriculture of the State University, together with Mr. Taylor and Mr. Long and two members of the Board of Regents, visited the Station on Thursday afternoon. They expressed themselves as being much pleased with conditions here.

The weather has been very favorable for growing crops, all of which show the effect of the warmer weather. Sugar beets and potatoes have been cultivated, and small grain plats have been irrigated.

The spring pigs have been divided into two lots for the usual experimental work.

The average maximum temperature for the week ending July 16 was 86, with a maximum of 90 on the 10th; the average minimum temperature was 54, with a minimum of 52 on the 14th. The precipitation was .63 inch.

All crops show rapid growth, especially small grain and alfalfa. Small grain plats have been irrigated this week, also Early Cobbler and Triumph potatoes. Potato and sugar beet plats have again been cultivated. Second crop alfalfa is coming on fast and will soon be ready to cut.

The average maximum temperature for the week ending July 23 was 83, with a maximum of 88 on the 21st; the average minimum temperature was 59, with a minimum of 49 on the 17th. No precipitation was recorded.

Beets have again been cultivated. They show steady growth although the stand is uneven. Ditches have been made in the plats for irrigation. Oats are beginning to ripen. The second cutting of alfalfa is about ready. Corn is looking very good. All crops show the effects of warmer weather.

Mr. F. D. Keim, Mr. Brokaw, and a party of young men from the College of Agriculture, visited the station on Wednesday and inspected the various crop plats.

The average maximum temperature for the week ending July 30 was 80, with a maximum of 88 on the 27th; the average minimum temperature was 55, with a minimum of 50 on the 25th. The precipitation amounted to .66 inch.

The weather during the week has been rather cool, though crops show good growth. The second crop of alfalfa has been cut but has not been stacked owing to the rains. The short rotations of oats have been cut and shocked. Sugar beets and potatoes have been irrigated.

Preparations are being made for the Annual Picnic, which will be held on August 4.

James A. Holden.

Yuma

During the month of July the maximum temperature was 113.5, mean maximum 106.6; minimum 60, mean minimum 73.4; and the mean temperature for the entire month was 89.5. The precipitation was .63 inch; 24 days were clear, 4 cloudy, and 2 partly cloudy.

The maximum temperatures for this month have been somewhat above normal, and with a few thunder showers recorded, the heaviest of which

Yuma (continued)

produced .39 inch of rain, the weather in general has been somewhat unfavorable for the cotton crop. The shedding of squares and small bolls is usually quite severe when high minimum temperatures are accompanied by high humidity. The first bale of cotton for the 1927 crop on the Project was ginned during the past week. This cotton was grown in the Rood District in the Yuma Valley. It appears, however, that the season for picking will be, in general, somewhat later than last year.

Much of the alfalfa seed on the Project has been harvested during the month. The acreage and average yields per acre will be pretty much the same as last season. Some storm damage was reported in the Somerton District, where nearly 2 inches of rain was recorded for one of the thunder storms. No price has been established yet for the 1927 seed crop.

The Colorado River has decreased to a normal flow with no breaks or damage to the levee system as a result of the 1927 flood. At the present time the river is flowing less than 20,000 second-feet of water.

Station work performed during the past month has included harvesting the fourth cutting of alfalfa hay, planting corn on the rotations, cutting clover and volunteer grain sorghum on plats D-18 to 26, planting grain sorghum on the plat variation test plats, pruning date palms, propping up fruit clusters on date palms, general irrigating, hoeing, and cultivating.

Edward G. Noble.

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Vol. XXIX August, 1927 Nos. 32—35

Newlands

The following meteorological data were recorded at this station for the four-week period ending August 13: Mean maximum 92.6, maximum 97; mean minimum 58.7, minimum 41. There was .09 of an inch of rainfall on the 29th of July.

Comparative Monthly Weather Report for July

	1927	21-year average
Temperature, mean maximum	93.2	93.2
" , mean minimum	51.9	54.2
" , mean	72.6	73.6
" , highest	98.0	100.5
" , lowest	41.0	43.9
Precipitation, inches	.09	.16
Wind velocity, miles per hour	2.54	2.83
Evaporation, inches	8.63	10.27
Days clear	26	23.4
" partly cloudy	4	4.8
" cloudy	1	2.9

The farm work has consisted of cultivating corn, beets, potatoes, etc., cutting the grain and second crop of alfalfa.

Mr. Scofield visited the station during this period. He inspected the various lines of experimental work being conducted at the station and planned some new experiments for this year. The work being done with the gypsum distributing apparatus is to be increased, and further reclamation work is to be done on the Y series.

Mr. Thos. Means, a former project manager, was a visitor during Mr. Scofield's stay.

E. W. Knight.

San Antonio

Report for four weeks ending August 13:

The weather remained hot and practically rainless through the last half of July. The mean temperature for the month was 84.4, only 0.1 degree above the 20-year normal. The first two weeks of August were entirely rainless and increasingly hot. All sorghum (including Johnson grass) fields not yet harvested are burned brown, while those from which a crop has been taken show little or no signs of new growth. Cotton is suffering so severely from drought in most fields that a large percentage of the foliage is being shed. Boll weevils have continued present in sufficient numbers to cause the shedding of all squares formed. Occasional bolls which escaped their attention until at least half grown are now furnishing ideal conditions for their continued propagation in spite of the high temperatures and low humidity. Many thousands of acres in the San Antonio region will not be harvested. Poisoning has been attempted by some growers, but reports received at the station indicate

San Antonio (continued)

negative results in all cases owing to a lack of dew.

A summary of the meteorological data recorded at the station for the past four weeks and for the month of July is given below.

Week ending	Temperatures Max.	Min.	Mean	Precipitation Inches	Days	Sky Clear	Partly cloudy	Cloudy
July 23	103	72	85.9	0.12	1	3	4	0
" 30	99	71	85.3	0.11	1	0	4	3
Aug. 6	101	72	86.9	0.00	0	2	4	1
" 13	103	72	87.6	0.00	0	3	3	1
July 1 to 30, incl.	103	68	84.4	0.36	3	8	15	8

Field work at the station has included summer plowing, cultivating cotton and fallow, harvesting and threshing grain sorghums from the rotation plats and the variety test, harvesting all corn plantings, and soil moisture sampling.

Grain sorghum yields from the rotation and variety tests are given in the two following tables. Corn yields will not be reported until crib-dry weights and shelling percentages have been obtained from samples taken at the time of harvest.

Yields of Milo from Rotation Plats,
with Crop Sequences used in each Rotation.

Rotation No.	Crop Sequence	Yield of grain per acre (bushels)	Per Cent Bird Damage 2/
A4-F	Sorgo, cotton, oats, milo (field peas)	19.4	15
G	Do, except field peas harvested for hay	25.5	10
A5-A	Oats, cotton, milo	18.1	10
B	Oats, cotton-manure, milo	21.4	15
C	Cotton, oats, cotton, milo	18.5	15
D	Cotton, oats(cowpeas),cotton, milo-manure	19.3	10
E	Cotton, oats(cowpeas),cotton, milo-manure	22.7	10
A6-1	Continuous milo	14.3	15
2	Continuous milo-manure	0.0 1/	
1A	Oats, milo	26.4	45 3/
D	Corn, milo	18.1	10
B4-A	Sudan grass, cotton, milo	17.4	5
B	Oats (field peas), cotton, milo	18.2	5
B5 E	Cotton, milo	17.9	5
	Average of 13 plats	19.8	

1/ Bird damage practically 100% over entire plat. Not harvested and not included in averages.

2/ This column gives the estimated per cent bird damage to only the portions of the plats harvested for yield data. Portions of all plats on the "A" series except A6-1A were eliminated becuase of excessive and non-uniform damage. A6-1A was very severely, but uniformly, damaged throughout.

3/ The stand secured on plat A6-1A from first planting was very poor; additional loss by freezing made replanting necessary 22 days after other plats. Subsequent climatic conditions and absence of sorghum midges were apparently especially favorable to late planting.

San Antonio (continued)

Yields of Grain from Sorghum Varieties Planted in Duplicate, Tenth-acre Plats in Field C-4, Arranged in the Order of Planting.

Variety	Number	Estimated bird damage	Average yield per acre
		(Per cent)	(Bushels)
Dwarf milo	S.A. 3189	10	22.7 a/
Spur feterita	C.I. 623	10	24.4
Feterita	C.I. 182	5	25.1
Chiltex	T.S. 8917	T	34.6
Dwarf milo	S.A. 3189	5	23.8 a/
Dwarf hegari	S.P.I. 34911	T	27.9
Reed Blackhull kafir	C.I. 625	40	21.9
Sunrise kafir	C.I. 472	65	9.6
Dwarf milo	S.A. 3189	T	24.2 a/
Texas Blackhull kafir	T.S. 9195	100	0.0
Double dwarf milo	----	T	23.1
Smith milo-kafir	C.I. 808	T	27.6
Dwarf milo	S.A. 3189	T	22.6 a/
Darso	C.I. 615	0	24.3
Orange	F.C.I. 6609	T	25.8
Sumac	Local	T	24.5
Honey	F.C.I. 6605	c/	0.0
Dwarf milo	-------	---	23.3 b/

a/ Milo averages are of four plats, the check plats nearest the next three varieties listed.
b/ This average is for all milo plats in the planting.
c/ Midge damage practically 100%.

The sorghum variety test was more nearly satisfactory this year than is usually the case. Good stands of all varieties were secured, and sorghum midges were serious in only the extremely late flowering varieties. Planting seed of Texas Blackhull kafir was not received until ten days after other varieties were planted. Birds concentrated on the kafirs. This was principally because their grain was still in the dough stage after fields of milo on the station had been harvested and the grain of earlier varieties in the variety test had hardened. Sparrows have a decided preference for sorghum grains in the early dough stage.

Dr. John H. Martin, Associate Agronomist in Charge of Sorghum Investigations, Office of Cereal Crops and Diseases, was a visitor on August 7.

Geo. T. Ratliffe.

Scotts Bluff

The average maximum temperature for the week ending August 6 was 75, with a maximum of 87 on the 6th; the average minimum temperature was 53, with a minimum of 50 on the 4th. Precipitation for the week amounted to 2.37 inches.

Rainy weather the first five days of the week greatly hindered field work. The second crop of alfalfa has been lying on the ground for

Scotts Bluff(continued)

about ten days, being too wet to stack. Various oats plats are being cut,and some Early Cobbler potatoes will be dug today. All crops show good growth, especially corn.

The annual picnic was held at the farm on Thursday. There was a large attendance, approximately two thousand people being here during the day and evening, when a barn dance was held. Livestock judging contests, examination of the farm crops, and various contests for young and old occupied the day.

The average maximum temperature for the week ending August 13 was 80, with a maximum of 84 on the 11th; the average minimum temperature was 54, with a minimum of 50 on the 8th. Precipitation during the week was 1.29 inches.

Continued rains have practically destroyed the second cutting of alfalfa at the station and have injured somewhat the plats of small grain which had not been cut. All crops show good growth, especially corn, sugar beets, and potatoes.

Potatoes planted in the time-of-digging test were dug on August 6. The Irish Cobblers yielded 219 bushels per acre and the Triumphs 110 bushels.

Mr. James A. Holden, Superintendent, will leave the first of next week to visit several towns in Colorado on the third annual beet tour of the Great Western Sugar Company.

The average maximum temperature for the week ending August 20 was 75, with a maximum of 82 on the 15th; the average minimum temperature was 49, with a minimum of 45 on the 19th. Precipitation during the week amounted to .96 inch.

The weather has been unusually cool most of the week with very little sunshine, but the growth of crops does not seem to have been retarded. So much moisture has accumulated in the ground from recent heavy rains that irrigation has not been necessary and probably most crops could have been harvested without it this season. The potatoes and sugar beets need good warm weather for at least thirty or forty days.

The second cutting of alfalfa has finally been stacked, but it will be of very poor quality. Barley which was planted with sweet clover has been stacked, and the sweet clover is starting up well. The third cutting of alfalfa should make a fairly good yield, but it will be considerably later than usual.

The average maximum temperature for the week ending August 27 was 80, with a maximum of 86 on the 26th; the average minimum temperature was 53, with a minimum of 49 on the 24th. The precipitation during the week was .24 inch.

The weather has been rather cool most of the week with scattered showers. All crops are growing steadily, especially alfalfa and corn. Potatoes in the time-of-digging test show greater yields than a week ago, Early Cobblers yielding over 400 bushels to the acre. The barley not used in experimental work has been stacked; and the sweet clover sown with it is growing nicely.

James A. Holden.

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Newlands

The following meteorological data were recorded at this station during the five-week period ending September 17: Mean maximum 82.3, maximum 93 on August 17; mean minimum 42.5, minimum 28 on September 14. There was .16 of an inch of rainfall during the period. Of this total .10 of an inch fell on September 12 and .06 of an inch on September 3.

A killing frost occurred on September 8. The frost-free period of 102 days this year is 22 days shorter than the 22-year average. It has been, with one exception, the shortest growing period during these 22 years. In 1916 there were 100 frost-free days.

The work at the station during this period has consisted of cultivating the potatoes and beets, hauling manure and applying treatments to the rotations on E, plowing E-3, 4, 5, 6 and F-1, 3, 6, 8.

The ensilage corn has been cut from plats F-8 and D-5. The yields were as follows:

Plat	Area	Actual yield	Yield per acre
D-5	.56	7,775 lbs.	13,884 lbs.
F-8	.54	8,015 "	14,843 "

There were four irrigations during this period. The entire farm was completely irrigated twice.

Alfalfa has been seeded on plats H 6-12, on all of G, and on the bare spots of all other alfalfa plats.

E. W. Knight.

San Antonio

The three weeks ending September 3 remained hot and dry, the mean temperature being well above normal during the first and third weeks and slightly below normal the second week. Only one insignificant shower of .05 inch occurred during this period.

Cotton boll-weevils apparently became somewhat less active during the last ten days, and some few fields of cotton which have not suffered too severely from drought have been observed to have succeeded in opening a few flowers. There is so little available moisture in most fields that the plants will not be able to flower before a good rain is received, even with an entire absence of weevils. Some cotton fields have been plowed while some others, where the grower has livestock, are being pastured.

Practically all stock ponds are dry, and dry-land meadows and pastures have made no growth for the past six or seven weeks.

The weather for the month of August was both hotter and drier than normal, the mean temperature being 85.5 degrees as compared with a normal mean of 84.6 degrees, and the total precipitation being .05 inch as compared with the 20-year average of 1.54 inches. A tabulated summary of meteorological data recorded at the station for the three-week period covered by this report and for the month of August is given below:

San Antonio (cont'd)

Week ending	Temperature (degrees F.) Maximum Absolute	Maximum Mean	Minimum Absolute	Minimum Mean	Mean	Precipitation (in.)	Sky (days) Clear	Partly cloudy	Cloudy
Aug. 20	103	99.9	69	71.6	85.7	0.0	5	2	0
" 27	99	95.3	66	67.9	81.6	0.05	5	1	1
Sept. 3	103	100.4	70	73.6	87.0	0.0	6	1	0
Month of August	103	99.3	66	71.8	85.5	0.05	18	10	3

Fields A-3, B-3, C-3, E-3, and the corral pasture were plowed during the past three weeks. The cotton crop for 1927 from 30 rotation and tillage plots was picked; a total of 116 pounds of seed cotton was found. This is at the rate of 15.5 pounds of seed cotton per acre.

Other farm operations during the period have included manuring rotation plots, cutting corn stalks on field C-3, chopping Johnson grass from the pistache orchard on D-4, weeding of all outside farm fences, and general upkeep and repair work on grounds and improvements.

Geo. T. Ratliffe.

Scotts Bluff

The average maximum temperature for the week ending September 3 was 81, with a maximum of 85 on the 2d; the average minimum temperature was 53, with a minimum of 49 on the 1st. Precipitation during the week was .06 inch. The total precipitation for the five months ending August 31 amounted to 16.16 inches.

Threshing of all station grain was completed this week. The yields of the various plats of oats were very good. There has been so much rain since the barley was cut that it threshed out quite damp. The potatoes, beets, and alfalfa have been irrigated. The third crop of alfalfa looks promising.

During the week ending September 10 the average maximum temperature was 84, with a maximum of 87 on the 7th; the average minimum temperature was 55, with a minimum of 53 on the 7th. The precipitation amounted to 1.23 inches.

On the afternoon of the 6th a very heavy rain with hail did considerable damage to leaves on sugar beets and corn, and probably some alfalfa was also injured; but the growing beets and potatoes were not harmed.

All plats, including beets, potatoes, alfalfa, and sweet clover, have been irrigated this week. A fence has been built around the sweet clover so that it can be pastured. Field corn is practically matured. The rest of the early planted potatoes will be dug the coming week.

The average maximum temperature for the week ending September 17 was 83, with a maximum of 89 on the 13th; the average minimum temperature was 53, with a minimum of 45 on the 16th. The precipitation during the week was .16 inch

Scotts Bluff (cont'd)

Irrigation of the various potato and sugar beet plats has again been completed. The warmer weather has ripened the potato vines and greatly aided growing sugar beets. Corn is practically out of danger from frost, and the siloes will be filled the coming week. Alfalfa will soon be ready for the third cutting.

Fall farrowing of sows has begun. Forty fat hogs are being shipped to the Denver market September 17.

During the week ending September 24 the average maximum temperature was 70, with a maximum of 79 on the 24th; the average minimum temperature was 39, with a minimum of 28 on the 20th.

Light frosts occurred on the nights of the 18th and 19th; but no damage was reported to potatoes and beets. The weather has been clear and cool all the week.

The three silos have been filled with silage. This-week corn is of very good quality. The corn plats have been cut and shocked. The third crop of alfalfa is now being cut. Beets are being irrigated again. The beet harvest is starting earlier in the Valley than usual because of the large tonnage expected.

James A. Holden.

WEEKLY REPORTS
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Newlands

The following meteorological data were recorded at this station during the four-week period ending October 15: Mean maximum 75, maximum 92 on September 20; mean minimum 34, minimum 19 on October 8; mean 54. There was no rain during this period.

The work at the station has consisted of the usual fall work, such as burning weeds, plowing, picking fruit, etc.

The corn on E has been husked and cribbed. Due to the unusually short frost-free period and cool nights, very little of the corn matured. As a result the yield is exceptionally low. The yields of these corn checks on E are shown in the following table. The stalks were weighed dry after the corn had been husked.

Plat	Area, acre	Actual yield		Yield per acre	
		Corn on cob	Stalks	Corn on cob	Stalks
		lbs.	lbs.	lbs.	lbs.
E-1	.56	925	2,055	1,652	3,665
2	.57	645	1,395	1,132	2,445
7	.49	180	805	368	1,644
8	.72	570	1,290	793	1,792

E. W. Knight.

San Antonio

The following table gives a summary of the climatological data recorded at the San Antonio Field Station for the four weeks ending October 1 and for September 1927.

Week ending	Temperature (degrees F.)					Precipitation (inches)	Sky (days)		
	Maximum		Minimum				Clear	Partly cloudy	Cloudy
	Absolute	Mean	Absolute	Mean	Mean				
Sept. 10	99	95.1	70	71.6	83.4	1.16	0	3	4
" 17	96	93.3	67	71.9	82.6	0.42	1	4	2
" 24	97	89.4	61	64.4	76.9	0.00	2	4	1
Oct. 1	95	89.4	60	68.4	78.9	1.37	1	1	5
Month of Sept.	103	92.8	60	69.6	81.2	1.83	6	14	10

Heavy, intermittent showers on September 8 and 9 totalled 1.11 inches of precipitation and brought temporary relief from the summer drought. They also broke the long siege of hot weather. Cotton and areas of hay sorghums which had not entirely burned out started into new growth. Temperatures were unusually high the first eight days of September and about normal through the remainder of the month, the mean temperature of 81.2 degrees F. being 1.5 degrees above normal. Rainfall for the month was 1.83 inches as compared with the 20-year average of 2.69 inches.

San Antonio (continued)

Cotton boll weevils came through the drought in sufficient numbers to destroy practically all squares which formed, precluding any hope for a late top crop. Ginning is about completed in this region. The yield is well below 50 per cent of normal. The yield from 30 rotation and tillage plots on the station was at the rate of 15.5 pounds of seed cotton per acre. All other station plantings will not be picked.

Station work has included the plowing of fields C-4, C-6, and D-1; manuring, plowing, and planting the gardens; hauling sorgo hay from fields C-6 and ABC-7; shelling "crib-dry" corn samples; and miscellaneous repairing of machinery and equipment.

Corn yields, computed on crib-dry basis, and shelling percentages for all of this year's plantings are given in the following tables. As is indicated by the shelling percentages, the grain produced in practically all cases was of very poor quality. This was caused by the combination of hot droughty weather immediately preceding flowering, followed by three weeks of continuously hot, wet weather in June during and following flowering.

Corn - Rotation and tillage experiments - Yield per acre of crib-dry ear corn and shelled corn, and shelling percentage.

Plot No.	Rotation and tillage	Yield per acre: Ear corn	Yield per acre: Shelled	Shelling percentage.
		bushels	bushels	
A4-3	Corn, P. July; fallow	22.7	20.9	73.8
8	Corn, P. July; cotton, P. Nov.*	8.8	8.3	76.0
A6- 7	Corn, P. July; oats for hay, P. May	23.9	23.1	77.3
9	Corn, P. July; oats for hay, P. Nov.	8.3	7.9	76.5
11	Corn, P. July; oats for hay, subsoil May	20.1	19.4	77.1
13	Corn, P. July; milo, P. fall	11.9	11.5	77.3
15	Corn, P. July; oats for grain, manure, subsoil June	21.1	20.4	77.2
17	Corn, P. July; Sudan grass, manure, P. Nov.	14.5	13.9	76.5
B5- 1	Corn, P. July,- continuous	8.0	7.7	76.9
2	Corn, manure, P. July,- continuous	7.4	7.1	76.0
13	Corn, P. July; sorgo (4 ft. rows) P. Nov.	14.3	14.1	78.8
15	Corn, P. July; sorgo (8" drills) P. Nov.	14.1	13.5	76.8
B6- 1	Corn, P. July; cotton, P. Nov.	15.7	15.4	68.5
B6- 3	Corn, subsoil July; cotton, subsoil Nov.	19.9	19.8	79.3
5	Corn, manure, P. July; cotton, P. Nov.	13.4	12.9	77.2
7	Corn, manure, field peas, P. spring; cotton, P. Nov.	16.3	16.1	78.8
9	Corn, manure, field peas, P. spring; cotton, subsoil Nov.	17.5	17.0	77.8
11	Corn, disk July; cotton, P. Nov.	13.0	12.6	78.2
13	Corn, P. Feb.; cotton, P. Feb.	18.5	17.4	75.2
15	Corn, subsoil Feb.; cotton, subsoil Feb.	18.8	18.5	78.8
17	Corn, rye, P. Feb.; cotton, P. Nov.	17.4	16.5	75.9
Maximum		23.9	23.1	79.3
Minimum		7.4	7.1	73.8
Average		15.5	15.0	77.1

*Plot bordered to prevent run-off of rainfall.

San Antonio (cont'd)

Corn - Variety Test - Yield per acre in bushels of crib-dry grain for each plot and average yield and shelling percentage for each variety. Each variety planted in 1/20 acre, duplicated plots with check variety in every fourth plot.

Variety	Yield ear corn per acre			Average	
	1st plot	2nd plot	Avg. of 2 plots	Shelling %	Yield shelled
Check 1/	10.8 2/	18.8 2/	14.8 3/	70.4 3/	13.1 3/
Surcropper	9.2	21.1	15.2	77.6	14.7
Chisholm	5.5	13.2	9.4	72.3	8.3
Hastings Prolific	7.0	21.0	14.0	73.1	13.2
Check	13.1	17.0	15.0	71.2	13.4
Evins Yellow Dent	10.3	15.0	12.7	76.5	12.0
Ferguson " "	16.7	13.9	15.3	74.4	14.2
Reid " "	13.6	7.6	10.6	76.9	10.3
Check	14.7	18.4	16.6	70.9	14.7
Miss. Laguna	14.0	12.2	13.1	71.9	11.8
Thomas	6.7	9.3	8.0	75.4	7.6
Horton	14.9	17.7	16.3	71.4	14.6
Check	16.0	19.6	17.8	71.6	16.0
Delta Prolific	14.5	9.5	12.0	74.8	11.3
Boone County White	12.1	12.2	12.2	70.6	10.7
Check	----	----	16.2 4/	70.9 4/	14.4 4/

1/ Laguna, bulk selected at San Antonio Field Station used as check variety.

2/ Yields shown for check in these columns are average of the two check plots occurring one on either side of the next three varieties listed.

3/ Averages for checks in these columns are the averages of four plots, one each on either side of each of the duplicate plots of the next three varieties as listed.

4/ Average of all (9) check plots.

San Antonio (cont'd)

Corn- Row spacing test - Stand in plants per acre, yield per acre of crib-dry ear and shelled corn, and shelling percentage of Reid Yellow Dent corn planted in .3 acre plots at various distances between rows.

Row spacing	Stand	Yield per acre		Shelling percentage
		Ears	Shelled	
feet				
5.0	3,822	10.5	9.7	73.2
4.1	4,862	11.5	11.2	77.8
3.5	5,950	12.7	12.3	77.6

Mohamed Afzal, cotton breeder at the Agricultural Experiment Station of the province of Punjab at Lyalpur, India, was a visitor September 6.

Mr. A. C. Dillman, Agronomist in Charge of Flax Investigations, spent September 30 and October 1 at the station checking over the past results and planning flax experiments for the coming winter.

Geo. T. Ratliffe.

Yuma

The maximum temperature for the month of September was 108. This occurred on three days consecutively: the 4th, 5th, and 6th. The mean maximum was 99.2, mean temperature 45, mean minimum 62.8, greatest daily range 53, precipitation 0; 27 days were clear, 2 partly cloudy, and 1 cloudy.

The warm weather which continued throughout the month was very favorable for the late growth of cotton. This crop has opened up quite rapidly, and the picking and ginning season is now under way. Local prices for lint are about 22 to 23 cents per pound; seed at the gins is bringing $31.50 a ton. Picking prices so far have been $1.50 per hundred.

Toward the end of the month some of the second crop of alfalfa seed was harvested. This crop will be lighter than usual, and as alfalfa seed prices during the season have not advanced beyond 14 cents per pound, the returns from the second crop of seed will be small. The grain sorghums are beginning to mature. The land to be planted to lettuce is still being prepared, although some plantings have already been made.

Station work performed during the period consisted of planting alfalfa varieties, Berseem clover, and oats; seeding of vetch in the irrigated rotations; roguing of grain sorghum plots; plowing series D, plats 18 to 26, for new rotations; harvesting dates; cleaning ditches; general hoeing, irrigating, and cultivating.

Edward G. Noble.

W E E K L Y R E P O R T S
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Newlands

The comparative monthly weather report for November follows:

	1927	21-year average
Temperature, mean maximum	59.9	55.9
" , mean minimum	28.8	24.1
" , mean	44.3	40.6
" , highest	71.0	71.7
" , lowest	10.0	10.3
Precipitation, inches	.10	.32
Wind velocity, miles per hour	2.16	2.34
Evaporation, inches	1.66	1.88
Days clear	11.0	17.5
" partly cloudy	4.0	5.9
" cloudy	15.0	6.7

Twenty-six new wells have been put down on the Y series, so that the study of the underground waters may continue. This work was originally started in August 1922. Since that time weekly readings have been made and the water elevations and the total salt content of each well determined. It has been found in the process of years that there has been a gradual decrease in the elevation of the water and also in the total amount of salts present. The Y series reflects this in the increased yields of alfalfa. Plats 2, 3, 4, and 5 have been plowed and will be seeded to wheat next spring. This completes the fall plowing for this season.

Some of the laborers have been busy cleaning ditches, repairing irrigation boxes, cutting down trees, and general cleaning up about the premises.

The herd sire connected with the dairy experiment has been sold and will be replaced by another purebred animal from Mr. Long's herd of Holsteins.

Three more groups of hogs have been put on feeding experiments. Mr. Headley now has carpenters busy building more pens to accommodate additional feeding groups. The last hogs sold brought 9½ cents a pound.

Early in the month the Superintendent arrived in Washington, D. C., where he has been busily engaged in official duties.

E. W. Knight.

San Antonio

The meteorological data recorded at this Field Station during the five weeks ending November 5 are summarized below, by weeks. Similar data for the month of October are also given.

San Antonio (continued)

Week ending	Temperature (degrees F) Maximum Absolute	Maximum Mean	Minimum Absolute	Minimum Mean	Mean	Precipitation (inches)	Sky (days) Clear	Partly cloudy	Cloudy
Oct. 8	92	87.0	63	68.1	77.6	0.90	2	2	3
" 15	91	82.4	45	52.9	67.6	0.00	7	0	0
" 22	90	85.7	49	52.4	69.1	0.00	5	2	0
" 29	90	87.7	52	59.3	73.5	0.00	2	5	0
Nov. 5	89	83.7	42	55.1	69.4	0.08	3	3	1
Month of October	92	85.8	45	58.9	72.3	2.10	16	10	5

The precipitation for October 1927 was .78 inch less than the average for the past 21 years. Total rainfall for the year to October 31 has been 20.20 inches as compared with a 21-year average of 22.29 inches. The mean temperature for the month--72.3--is 2.5 degrees above the average mean October temperature. Maximum temperatures were not excessive, but the minimums ran above normal throughout the month.

A total rainfall of 2.02 inches during the first eight days of October brought up such small grain plantings as had been made in dry soil during September, and provided good seedbed moisture for planting fields which had previously been plowed. Second-crop sorgo, which was practically at a standstill, was again started into new growth. Lack of rainfall, together with temperatures above normal, caused the sorgo fields to be again suffering for moisture by the latter part of October. For the same reason early planted winter grain was soon in distress, and present appearances indicate that a large percentage of these fields have "burned out" and will need to be replanted. Many farmers have drilled their oats and wheat into dry seedbeds during the past two weeks. The station plantings of winter cereals are usually made as soon after the middle of November as soil moisture conditions are favorable.

Cotton ginnings for Bexar County to November 1 were slightly over 9,000 bales, with prospects that the final total would be less than 10,000 bales. This is about one-third the average yield for the county during the last ten years.

Oats planted in the corral pasture October 5 emerged to a good stand but suffered so from drought the latter part of the month that replanting will probably be necessary. Field peas for green manure were planted October 29 in dry soil on six rotation plots. The second crop of row sorgo was harvested October 31 and of drilled sorgos November 3. A low yield of poor quality hay was obtained, as the plants had been twice stunted by drought and were beginning to burn badly again when harvested.

Other station work accomplished during the period covered by this report includes plowing of "fall plowed" rotation plots, pasture on D-4 and D-5, and fields AB-8 and C-4; manuring rotation plots; cultivating all orchards and vineyards; transplanting pistache trees from nursery to orchard D-4; mowing waste lands; hauling firewood; and repairing and painting farm buildings.

Drs. Oswald Schreiner and J. J. Skinner, Soil Fertility Investigations, Bureau of Chemistry and Soils, visited the station October 21 and 22 in the course of their study of cotton rootrot.

San Antonio (continued)

The drought which has been almost continuous since June 29 continued throughout the four weeks ending December 3. During the month of November only three traces of precipitation were recorded. This is the first November since the beginning of meteorological observation at this station for which there has been no measurable quantity of rainfall, the twenty-year normal for the month (1907 to 1926, inclusive) being 2.10 inches. The accumulated deficiency for the calendar year to date is 4.25 inches.

With the exception of one short period, from the 16th to the 20th, the entire month of November was unusually warm, the mean for the month--69.4 degrees F.--being 8.7 degrees above normal and 3.6 degrees higher than recorded for any November during the preceding twenty years. A minimum temperature of 33 degrees occurred the night of the 16th, at which time a light frost was observed in the lower-lying areas. Prospects for winter crops are at this time very discouraging. The meteorological data recorded for the four weeks covered by this report, and for the month of November, are summarized in the following table:

Week ending	Temperature (degrees F.)					Precipitation (inches)	Sky (days)		
	Maximum		Minimum				Clear	Partly cloudy	Cloudy
	Absolute	Mean	Absolute	Mean	Mean				
Nov. 12	89	85.7	56	62.1	73.9	Tr.	2	4	1
" 19	87	77.1	33	48.7	62.9	Tr.	3	1	3
" 26	84	83.6	55	59.4	71.5	0	2	2	3
Dec. 3	85	72.6	28	49.0	60.8	.02	2	0	5
Month of November	89	82.2	33	56.5	69.4	Tr.	10	9	11

Field work on the station during the period covered by this report has included plowing fields D-3, E-3, and F-3, cotton plots in the cotton-fallow experiment on field C-5, and "November" rotation and tillage plots; disking field C-6; cultivating orchards and fallow plots; manuring rotation plots; pruning date palms; and watering grounds plantings and first-year orchard plantings.

An iron pipe flagpole (35 feet from ground to sheave) was erected to take the place of a 30-foot cedar flagpole which had been blown down early in the summer.

The painting of six farmstead buildings was completed the middle of the month.

Geo. T. Ratliffe.

Yuma

The maximum temperature for the month of October was 104.5°, mean maximum 92.2°, minimum 42.5°, mean minimum 51.4°; mean temperature for the period 71.3°; greatest daily range 54; total precipitation .43 inch. This moisture fell in three light showers on the 25th, 28th, and 31st, respectively. Twenty-six days were clear, 3 partly cloudy, and 2 cloudy.

With the exception of the few light showers, weather conditions have been very favorable for the harvesting of the cotton and grain sor-

Yuma (continued)

ghum crops on the Project. The ginning reports for the month showed that about 8,600 bales were turned out from the 14 operating gins. This amount is just a little more than half of that ginned to date for last year. Present conditions indicate that the average yields of cotton per acre this season will be around 350 pounds of lint. Prices for lint are averaging about 22 cents, with picking charges remaining at $1.50 per hundred.

The early plantings of lettuce are now up to a fair stand. New plantings are being made each week.

Station work performed during the month consisted of harvesting grain sorghums on the variety tests and the irrigated rotations; picking and ginning cotton; constructing ditch and releveling plats for new rotations; cleaning ditches; and general irrigating and hoeing.

Station visitors during the month included J. H. Martin and A. C. Dillman, of the Cereal office; A. C. Cooley, of the Office of Demonstrations on Reclamation Projects; H. L. Westover, Forage Crop Office; T. H. Kearney, George Harrison, and Robert Peebles, of the Office of Alkali and Drought-Resistant Crops.

The meteorological data recorded during November show that the maximum temperature was 88, mean maximum 79.9; minimum 39, mean minimum 46; and mean temperature 62.9; greatest daily range 45; precipitation .55 inch; 21 days were clear, 5 cloudy, and 4 partly cloudy.

With the exception of one light shower on November 1, the weather in general has been very favorable for harvesting the summer crops. The frost-free period is already about three weeks longer than normal.

Picking and ginning cotton on the Project continues: approximately 12,000 bales have been ginned to date. This amount represents about two-thirds of the estimated total production. Picking prices remain at $1.50 per hundred. Cotton seed at the gins is selling for $37.00 per ton, and lint is moving at around 21 cents per pound.

Some of the early plantings of lettuce on the Project are now being harvested. Cantaloupe land is being prepared for planting.

Station work performed during this period included picking cotton on the irrigated rotations, harvesting grain sorghum plats, threshing grain sorghums, planting winter legumes, harvesting hay on all alfalfa plats, cleaning ditches, repairing pipe lines, and general irrigation, hoeing, and cultivating.

Station visitors during the month included Dr. Edgar Brown, of the Seed Laboratory in Washington, D. C., and Mr. R. E. Blair from the California Department of Agriculture.

E. G. Noble.

WEEKLY REPORTS
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Belle Fourche

MAXIMUM PRODUCTION 1927

General Land Treatment in the Fall of 1926

Plots I-1, II-1, III-1, I-4, II-4, and III-4 were manured in the fall of 1926. All plots to be in a cultivated crop in 1927 were fall plowed and left rough through the winter. Plots IV-2-5, alfalfa 1926, were also fall plowed and gone over with a duckfoot cultivator.

General Land Treatment in the Spring of 1927

All plots to be in cultivated crop or small grain were double disked March 31 and May 19, duckfooted May 3, harrowed May 25-26, and leveled May 26.

I-1, II-1, III-1.- Corn, Payne's White Dent.

This corn was planted May 28 and emerged June 10. It was later thinned to about 12 inches in the row, cultivated June 22, July 1 and 23, hoed July 21, and irrigated once on August 7. The first killing frost occurred on September 19, at which time the corn was not more than two-thirds ripe. The yield of dry ear corn in I-1, II-1, and III-1 was 42.7 bushels and 1.42 tons of stover. In I-4 the yield of dry ear corn was 39.6 bushels and 1.61 tons of stover. The average yield for the two plots was 41.1 bushels per acre. The nine-year average yield is 53.5 bushels per acre.

I-2.- Flax, Winona.

Duckfooted and harrowed just before planting. On May 28 the flax was planted with a disk drill at the rate of 40 pounds per acre. Winona, a wilt-resistant variety, was used. The flax was up June 10, irrigated July 12, and harvested September 6. The yield of clean flax was 14.3 bushels per acre. The ten-year average yield is 14.2 bushels.

I-3.- Barley, Trebi.

This plot was double disked March 31 and May 19, duckfooted May 3, harrowed May 25 and 26, leveled May 26, and planted to Trebi barley May 27 at the rate of 10 pecks with a disk drill. The barley was up June 6, irrigated July 12, and harvested August 18. The yield per acre was 47.3 bushels, test weight per bushel 45 pounds. The ten-year average yield is 48.8 bushels. This plot was seeded to barley by mistake; it should have been seeded to oats.

Belle Fourche (continued)

I-5.- Mangles, Half-sugar.

Before this plot was plowed in the fall it was double disked to cut up the corn stalks and roots. The plowing was left rough through the winter. In the spring it was double disked, duckfooted, harrowed, and leveled. The mangles were planted May 27 with a beet drill. They were up June 10; cultivated June 22, July 1 and 23; furrowed July 27; thinned June 25; hoed July 20; irrigated August 7 and 27; and harvested October 12. The yield was 25.16 tons per acre. The nine-year average yield is 30.1 tons per acre.

II-2.- Fallow.

Plowed in the fall of 1926, double disked, duckfooted, and leveled in the spring. Fallow during the summer, duckfooted August 18, and leveled September 9.

II-3.- Wheat, Kota.

The wheat in this plot follows sugar beets. This plot was double disked March 31 and May 19, duckfooted May 3, harrowed May 25-26, and leveled May 26. Kota wheat was planted May 28 at the rate of 7 pecks per acre, using a disk drill. It was up May 6, irrigated July 12, and harvested September 6. The yield per acre was 13.3 bushels, test weight per bushel 58 pounds. The ten-year average is 25.5 bushels.

II-4, III-4.- Potatoes, Bliss Triumph.

These plots were manured in the fall of 1926 at the rate of 24 loads per acre, and were fall plowed and left in the rough through the winter. They were double disked March 31 and May 25, duckfooted May 3, harrowed May 25-26, and leveled May 26. The potatoes were planted June 10; the furrow was opened with a riding lister and covered with a corn cultivator. On plot II-4, certified Bliss Triumph seed from Chadron, Nebraska, was used. On plot III-4, Bliss Triumph farm seed was used. A perfect stand was secured on II-4 but on III-4 only about a 50 per cent stand. The difference in stand on the two plots cannot be explained. The potatoes were up June 9, cultivated June 22, July 14 and 26, hoed July 21, furrowed August 6, irrigated August 25, and harvested October 14. The yield per acre on II-4 was at the rate of 291.3 bushels, with 90 per cent marketable tubers. On III-4 the yield was 126.7 bushels, with 86 per cent marketable. In computing the ten-year average yield, only one plot is used in 1927—II-4. The average yield for ten years is 231.6 bushels.

II-5.- Sugar beets, Klienwanzlebner.

Fall plowed and left rough through the winter, double disked March 31 and May 25, duckfooted May 3, harrowed May 25-26, leveled May 26, planted to sugar beets May 25, variety Klienwanzlebner. The beets were up June 15, thinned June 24, hoed June 24, cultivated June 23 and July 5, furrowed July 27, irrigated August 7 and 27, and harvested October 17. The yield per acre was 15.52 tons, sugar content 15.2 per cent with a purity of 85.3 per cent. The average yield for nine years is 17.7 tons.

Belle Fourche (continued)

III-2.- Winter Wheat, Turkey Red.

The plot was fall plowed August 3, 1925, and fallowed during the summer of 1926; it was irrigated before the seeding, disked, and leveled. Turkey Red wheat was planted September 1, 1926, with a disk drill at the rate of 7 pecks per acre. A good stand was secured in the fall of 1926, but during the winter months--January, February, March--the wheat was injured by blowing and the stand on the outer edges was badly damaged. Later in the summer the wheat was slow in developing and before harvest was very badly injured by black stem rust. The wheat was irrigated July 12 and harvested August 13. The yield was 9.9 bushels per acre. The average yield for eight years is 37.1 bushels per acre.

III-3.- Oats, Markton.

The plot was double disked March 31 and May 19, duckfooted May 3, harrowed May 25-26, leveled May 26, planted to Markton oats May 27 with a disk drill at the rate of 12 pecks. The oats were up June 6, irrigated July 12, and harvested August 18. The yield was 37.4 bushels per acre, test weight per bushel 28 pounds. They were badly damaged by rust. The average yield for ten years is 59.4 bushels.

III-5.- Mangles, Mammoth Long Red.

Fall plowed and left rough through the winter, double disked March 31 and May 19, duckfooted May 18, harrowed May 25-26, leveled May 26, and planted to mangles May 27 with a beet drill. The mangles were up May 15, cultivated June 23 and July 5, furrowed July 27, thinned June 25, hoed July 20, irrigated August 7 and 27, and harvested October 10. The yield per acre was 28 tons; the average for eight years is 31.8 tons.

IV-1 to 3.- Grimm Alfalfa.

Irrigated June 12, August 25, and September 12; harvested June 27, August 6, and October 1. The yield for the first cutting was 1.93 tons, second cutting 1.33 tons, and third cutting .84 ton—total for the season, 4.10 tons. The average yield for nine years is 4.99 tons per acre.

IV-2-5.- Repetition of Crops in Series I, II, and III.

These plots were manured in the fall of 1925 at the rate of 18 tons per acre; plowed in the fall of 1926, duckfooted and double disked March 31, duckfooted May 18, and harrowed and leveled May 26. They were planted to grain and cultivated crops as indicated in the map of 1927 plantings. The yield of the cultivated crops was a trifle higher with the exception of beets, but all the grain crops were lower. The differences in yield of these crops following alfalfa were not so marked as in 1925.

The general observations on crops in the maximum production experiment are about the same as in previous years.

Belle Fourche (continued)

IV

Beets	14.3 ton	g
Potatoes	308.0 bu.	f
Corn	50.3 bu.	e
Flax	10.3 bu.	d
Barley	29.3 bu.	c
Oats	20.6 bu.	b
Spring wheat	8.6 bu.	a

Grimm Alfalfa

First cutting	1.93 tons
Second cutting	1.33 "
Third cutting	.84 "

III

Mangles 28.3 tons
Potatoes 126.7 bu.
Oats 37.4 bu.
Winter Wheat 9.9 bu.
Corn 42.7 bu.

II

Sugar Beets 15.5 tons
Potatoes 291.3 bu.
Wheat 13.3 bu.
Fallow
Corn 42.7 bu.

I

Mangles 25.2 tons
Corn 39.6 bu.
Barley 47.3 bu.
Flax 14.3 bu.
Corn 42.7 bu.

Maximum Production of Crops on the Belle Fourche Field Station from 1918 to 1927, inclusive.

Crop	Yield per acre										
	1918	1919	1920	1921	1922	1923	1924	1925	1926	1927	Avg.
Alfalfa, tons	--	5.00	4.50	5.41	5.43	3.73	4.97	6.09	5.64	4.10	4.90
Barley, bu.	41.9	34.8	31.2	30.9	65.9	31.7	34.5	52.9	56.5	47.3	48.8
Beets, tons	12.2	--*	15.0	13.7	22.4	19.5	19.0	21.0	20.9	15.5	17.7
Corn, bu.	52.3	--*	52.4	58.4	56.0	56.7	37.2	65.1	62.8	41.1	53.5
Flax, bu.	17.2	11.6	7.1	18.2	16.9	8.6	13.6	14.7	19.6	14.3	14.2
Mangles, half sugar, tons	--	--*	18.5	30.5	34.9	30.0	44.0	33.4	24.3	25.2	30.1
Mangles, Mammoth Long Red, tons	--	--*	20.5	32.9	49.9	33.7	38.3	33.2	17.8	28.3	31.8
Potatoes, bu.	203.9	94.1	98.3	122.5	303.0	264.0	301.6	339.3	298.0	291.3	231.6
Oats, bu.	72.9	52.6	40.3	45.3	67.5	66.0	64.1	73.1	74.4	37.4	59.4
Wheat, bu.	38.8	26.7	16.3	26.7	31.2	18.2	22.3	32.7	28.7	13.3	25.5
Winter Wheat, bu.	--	40.7	--*	27.3	45.5	29.1	62.0	24.7	57.6	9.9	37.1

*Denotes crop failure; these years not computed in average yield.

Beyer Aune.

San Antonio

Report for four weeks ending December 31:

The meteorological data recorded during the four weeks ending December 31 are summarized in the following table:

Week ending	Temperature (degrees F.) Maximum Absolute	Maximum Mean	Minimum Absolute	Minimum Mean	Mean	Precipitation (inches)	Sky (days) Clear	Partly cloudy	Cloudy
Dec. 10	67	57.3	23	39.1	48.2	.31	1	1	5
" 17	82	67.1	24	46.7	56.9	.65	2	1	4
" 24	--	44.3	30	35.1	39.7	.22	0	0	7
" 31	76	62.1	20	39.4	50.8	1.10	1	3	3
Month of December	82	58.0	20	39.5	48.8	2.30	5	6	20

Cloudy, showery weather prevailed during the greater part of December. A total precipitation of slightly under one inch, which occurred during the first half of the month, made it possible to prepare the land for winter crops. Intermittent, light showers, ending with a soaking rain of 1.09 inches on the 27th, brought the total precipitation for the month to 2.30 inches and insured sufficient moisture to carry crops through the colder months of the season. Relatively cold weather prevailed during the latter part of the month, and germination of all plantings was correspondingly retarded. The mean temperature for the month of December was 2.6° below the 21-year normal.

Field peas and rye, planted for green manure early in November in rotation plots, failed to germinate, except in a very few favored spots, until the middle of December. Excellent stands had emerged on all plots by the last of the month; but as these crops are scheduled to be plowed under in February, there is little likelihood of their producing appreciable growth.

Starting with oats on rotation plots December 15, the following plantings were made during the remainder of the month:

Small grain variety test, north half of C-6
Oats for grain, ABC-7, B-3, C-3, C5-6, 7 & 8, south half of C-6, and D-5
Oats for pasture, corral pasture and D-4
Flax variety test, north end of B-4
Wheat for grain, AB-8 and E-3.

Field operations included the plowing of the Herbst tract and a portion of field ABC-7; taking soil moisture samples on oats plots; shelling corn from rotation and variety experiments; repairing farm buildings; and plowing, disking, harrowing, and seeding incident to the plantings listed above.

Dr. W. H. Long, Consulting Pathologist, Bureau of Plant Industry, located at Albuquerque, New Mexico, was a station visitor on December 30.

San Antonio (continued)

Summary of Weather Conditions of 1927 and Their Influence on Field Crops.

The year 1927 started with sufficient soil moisture for immediate needs of winter field crops but with little or no reserve. Rainfall during January was practically nil, while the first part of February was cloudy with enough light rains to keep small grains growing in good shape. The latter half of February and the first week of March were dry and some winter crops were showing signs of distress by the time a good rain of 1.14 inches fell on March 7. The period from March 21 to June 3 was unusually trying for all crops. High temperatures accompanying exceptionally strong, dry winds rapidly dissipated the scant rainfall received. All small grains were so seriously burned that only a few small favored areas were harvested; no pasture was available; sudan grass and sorghum meadows died out in spots; and the vitality of corn was so weakened that, although abundant rainfall occurred during June and the plants mostly assumed a healthy appearing growth, the yields were disappointingly low and consisted of nubbins and unfilled cobs. The highest temperature ever previously recorded at the station for May--103° F.--was equalled on the 8th, and a new record for the region was reached on two successive days--105 on May 28 and 29.

The mean temperatures for each of the first five months of the year were above normal; the average excess for this period was 3.5° F. Rainfall for the same period was below normal, the deficiency being 2.72. Wind movement during the first four months averaged close to normal, but during May it was 38 per cent greater than normal.

Cotton had suffered less than any other crop up to the beginning of the rains in June, and the boll weevil population was negligible. With much cloudy weather and the heaviest precipitation ever recorded for the month, June temperatures were only slightly below normal. These conditions were favorable for fungus and bacterial diseases. Cotton rootrot became very active in cotton as well as in alfalfa and the orchards. Bacterial leaf blight or angular leaf spot appeared in the cotton and by the end of the rainy spell (June 24) all fields were seriously defoliated. With the abundant moisture in the soil and the hot, dry weather which followed, cotton recovered and the plants were soon well clothed with leaves again. By this time, however, the original light infestation of boll weevils had increased until this pest was present in such numbers that in most fields throughout the region the cotton squares were punctured as soon as they appeared and flowering was entirely inhibited. Meadows which had not been entirely killed by the May drought resumed rapid growth during June and provided one good crop of hay. Fodder yields of corn were good, but grain production was near a failure in the majority of fields. Grain sorghums withstood the combination of climatic conditions in good shape and, where not destroyed by an exceptionally heavy plague of birds, gave very satisfactory yields. Damage from the sorghum midge (*Contarinia sorghicola*) was negligible in early planted fields.

All vegetation made luxuriant growth during and immediately following the period of excessive rainfall in June and, as field work had necessarily been practically at a standstill, weeds on the station became more numerous and of greater size than at any other time during the preceding seven years. This succulent growth soon dissipated the available moisture, and within a very short time all crops were again suffering

San Antonio (continued)

from drought. Cotton became so dry in most fields that leaves were shed, but boll weevils remained present in sufficient numbers to continue to destroy any flowers which the plants were able to attempt to produce. Many fields of sorgo which were planted after the June rains were unable to produce a crop of hay, and earlier fields from which one crop was harvested were not able to start a second crop.

The equinoctial rains, which can usually be expected in September, did not materialize, and no precipitation of agricultural importance was received from June 24 till October 1. On the latter date 1.12 inches of rain fell, and a week later another .89 inch was received. Some early small grain plantings were made with the hope of securing some pasturage, but there followed 63 days during which only .37 inch of rain was received in the form of small local showers, and any grain which germinated soon died of drought.

At the usual planting time for small grains there was no seedbed moisture. Many farmers prepared their land and planted in the dust. Between December 12 and 27 a series of local showers, with one more general rain of 1.09 inches, provided sufficient moisture to insure germination of winter crops, and the greater percentage of the small grain crops were being planted after Christmas. Because of this late planting and the decided shortage of subsoil moisture, prospects for winter pasturage were very unfavorable.

Taken as a whole, the year 1927 was unusually discouraging from the production standpoint. Owing to the low moisture content of the soil at the beginning of the year and the small amount of winter precipitation, very little winter pasturage was available through the winter and early spring. Hot and dry weather during the time the grain should have been filling, cut the oats, wheat, and barley crops to almost a complete failure. Corn started out with prospects for a good crop and then "blew up" as a result of the unprecedented hot, dry winds of May. Because of the light early infestation of boll weevils and the excellent start made by cotton, that crop had early season prospects of being a good bet; but the combination of angular leaf spot, heavy late infestation of weevils, and extreme drought after July 1 resulted in complete failure on many thousands of acres and a crop of less than one-third normal for the county. Sudan grass and sorghum produced approximately 60 per cent of a normal crop. Fall pasturage was entirely lacking except where cotton plantings were utilized for that purpose.

At least two climatological records were established during the year:

(1) The temperature of 105° F. on May 28 and 29 is the highest recorded for that month since the establishment of a weather bureau office in this region.

(2) The June precipitation--7.71 inches--is the highest for the month recorded at this station during the past 21 years.

A tabulated summary of climatological data for 1927 and for the period 1907 to 1927 is given in the following tables.

San Antonio (continued)

Summary of Meteorological Observations made at the U. S. San Antonio Field Station from 1907 to 1927, inclusive.

Item	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
Precipitation (Inches)													
21-year average:													
1907 to 1927	1.12	1.67	1.87	3.34	2.87	2.71	1.71	1.47	2.65	2.88	2.00	1.79	26.03
For 1927	.67	1.84	2.17	1.75	1.72	7.71	.36	.05	1.83	2.10	Tr.	2.30	22.50
Evaporation from free surface (inches)													
21-year average:													
1907 to 1927	2.40	3.05	4.57	5.59	6.67	7.99	8.95	9.13	6.83	5.15	3.22	2.46	66.01
For 1927	2.03	2.59	3.81	6.02	8.14	5.99	8.22	10.80	7.14	5.25	4.79	2.32	67.10
Daily Wind Velocity (Miles per hour)													
Highest:													
1911 to 1927	11.4	15.9	13.3	13.4	10.2	11.9	12.5	12.6	12.7	9.7	11.0	12.3	15.9
For 1927	7.4	7.7	7.8	7.9	8.1	8.4	7.3	7.5	6.8	5.8	9.0	8.8	9.0
Lowest:													
1911 to 1927	0.5	0.1	0.2	0.3	0.6	0.5	0.4	0.6	0.4	0.3	0.3	0.3	0.1
For 1927	1.1	0.9	0.9	1.8	0.8	0.5	1.0	0.9	0.9	0.9	1.5	1.2	0.5
Mean:													
1911 to 1927	3.6	4.1	4.5	4.2	3.7	3.6	3.4	3.2	3.0	2.8	2.9	3.2	3.5
For 1927	3.2	3.0	4.5	4.5	5.1	3.4	2.9	3.6	3.6	2.6	4.4	3.4	3.7
Temperature (° Fahrenheit)													
Absolute maximum:													
1907 to 1927	88.5	93.0	95.5	102	105	108	108	107	104	98	90	85	108
For 1927	83	90	90	93	105	99	103	103	103	92	89	82	105
Absolute minimum:													
1907 to 1927	9	13	17	29	39	47	60	56	41	24	15	15	9
For 1927	24	27	28	40	55	64	68	66	60	45	33	20	20
Mean:													
1907 to 1927	51.8	55.1	62.0	68.5	75.5	82.0	84.2	84.7	79.7	69.8	60.7	51.4	68.8
For 1927	54.2	59.6	62.5	73.1	81.1	80.1	84.4	85.5	81.2	72.3	69.4	48.8	71.0

San Antonio (continued)

Killing Frosts

Year	Last in Spring: Date	Last in Spring: Minimum temperature	First in Autumn: Date	First in Autumn: Minimum temperature	Frost-free period
		° F.		° F.	Days
1907	Feb. 8	29.0	Nov. 11	32.0	276
1908	Feb. 20	24.0	Nov. 14	29.0	268
1909	Feb. 25	30.0	Dec. 6	31.0	284
1910	Feb. 24	26.0	Oct. 28	32.0	246
1911	Feb. 24	29.0	Nov. 12	31.0	261
1912	Feb. 26	30.5	Nov. 2	30.5	250
1913	Mar. 26	30.0	Oct. 26	29.0	214
1914	Apr. 8	32.0	Nov. 19	31.0	225
1915	Mar. 23	32.0	Nov. 14	27.0	236
1916	Feb. 19	32.0	Nov. 13	29.0	268
1917	Mar. 4	17.0	Oct. 29	24.0	239
1918	Feb. 21	32.0	Nov. 28	29.0	280
1919	Feb. 28	32.0	Nov. 29	32.0	274
1920	Apr. 4	29.0	Nov. 14	31.0	224
1921	Feb. 23	32.0	Dec. 4	27.0	284
1922	Mar. 3	28.0	Dec. 18	28.0	290
1923	Mar. 19	20.0	Dec. 13	32.0	269
1924	Mar. 13	30.0	Nov. 24	26.0	256
1925	Feb. 11	26.0	Nov. 15	32.0	277
1926	Feb. 19	31.0	Nov. 9	30.0	263
1927	Mar. 1	28.0	Dec. 2	28.0	276
Average	Mar. 4		Nov. 18		260

Geo. T. Ratliffe.